

RESOURCE LISTING FOR WEATHER AND CLIMATE INSTRUCTION

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1. INTRODUCTION AND SCOPE

This document is intended to assist those who teach weather and climate at any level from pre-school through introductory college level courses, by listing some of the available instructional resources.

While an effort was made to select easily obtainable materials, some materials may not be available everywhere or may have become obsolete. This list is for informational

purposes only and inclusion of an item on the list by no means represents an endorsement of that product. Some good source materials may have been neglected inadvertently.

Permission is hereby granted for the reproduction of portions or all of this document for non-commercial educational use in schools on the condition that this source is acknowledged.

2. CAREER GUIDANCE MATERIAL

The American Meteorological Society (AMS) provides career guidance information to individuals contemplating a career in the atmospheric and oceanic sciences. Many of these materials are also available from the University Corporation for Atmospheric Research (UCAR). School counselors should be made aware of these materials.

AMS on web: www.ametsoc.org

UCAR on web: www.ucar.edu/edu/

- *Challenges of Our Changing Atmosphere: Careers in Atmospheric Research and Applied Meteorology*

A 12-page pamphlet from 1993 describing the nature of the atmospheric sciences and career opportunities. Single copies free.

- *The Changing Atmosphere - Challenges and Opportunities*
American Meteorological Society (AMS) and University Corporation for Atmospheric Research (UCAR), 24 pp. Single copies free.

- *1998 Curricula in the Atmospheric, Oceanic, Hydrologic, and Related Sciences*

This book is published jointly by the American Meteorological Society (AMS) and University Corporation

for Atmospheric Research (UCAR). It lists accredited institutions in the U.S. and Canada which have academic programs granting degrees from the bachelor to doctoral level. It also includes departments, course names, faculty members, and thesis titles. Order from the AMS (\$40 includes shipping and handling).

- *How to Be a Meteorologist*

World Meteorological Organization (WMO), WMO #257, 16 pp. A career pamphlet. Single copies \$5.00. www.wmo.ch.

The AMS sponsors several undergraduate awards and scholarships in the atmospheric sciences. Check the *Bulletin of the American Meteorological Society* for eligibility criteria, or contact the AMS for information and application forms at:

American Meteorological Society
45 Beacon Street
Boston, MA 02108-3693
Phone: (617) 227-2425
Fax: (617) 742-8718
Web: www.ametsoc.org

3. GENERAL INSTRUCTIONAL MATERIALS

American Meteorological Society (AMS)

The AMS has been involved with educational efforts at all levels, and with increasing public awareness of weather-related issues. The AMS web address is www.ametsoc.org.

•Current AMS Education Board leaders:

Dr. Susan Avery
CIRES (Cooperative Institute for Research in
Environmental Science)
Campus Box 449
University of Colorado
Boulder, CO 80309
Phone: (303) 492-7943

Dr. Kevin A. Kloesel, Chair
AMS Board of School and Popular Meteorological and
Oceanographic Education
Dept. of Meteorology, B-161
The Florida State University
Tallahassee, FL 32306-3034

•Local chapters of the AMS

*Guide to Establishing School and Public Education
Activities*, (second edition), 1989, AMS, Boston, 21
pp.

Smith, D.R., and J.T. Snow, 1990: Guide to establishing
school and public education activities. *Bulletin of the
American Meteorological Society*, **71**, 1760-1766.

•Conference Reports on popular meteorological education

AMS, 1989: Preprints, Second International Conference
on School and Popular Meteorological and
Oceanographic Education. Crystal, VA, 171 pp.

AMS, 1993: Preprints, Third International Conference on
School and Popular Meteorological and
Oceanographic Education, Toronto, ON, 218 pp.

AMS, 1994: Preprints, Third Symposium on Education,
Nashville, TN, 161 pp.

AMS, 1995: Preprints, Fourth Symposium on Education,
Dallas, TX, 211 pp.

AMS, 1996: Preprints, Fifth Symposium on Education,
Atlanta, GA, 228 pp.

AMS, 1997: Preprints, Sixth Symposium on Education,
Long Beach, CA, 176 pp.

AMS, 1998: Preprints, Seventh Symposium on Education,
Phoenix, AZ, 194 pp.

AMS, 1999: Preprints, Eighth Symposium on Education,
Dallas, TX.

•Articles on meteorological education

Kern, E.L., J.T. Snow, and M.E. Akridge, 1993: Impact on
pre-college atmospheric education. *Bulletin of the
American Meteorological Society*, **74**, 655-660.

Passow, J.J., and D.R. Smith, 1991: A new front in
weather education. *Science Teacher*, **58**, 18-21.

Smith, D.R., J.T. Snow, T.C. Spangler, D.D. Houghton,
and I.W. Geer, 1992: Meeting report on the 1992 AMS

Symposium on Education. *Bulletin of the American
Meteorological Society*, **73**, 795-799.

Smith, D.R., L.M. Bastiaans, R.S. Weinbeck, M.J. Passow,
P.J. Smith, N.J. Rydell, H.P. Warthan, T.C. Spangler,
and A.E. MacDonald, 1994: Meeting report on the
Third AMS Symposium on Education. *Bulletin of the
American Meteorological Society*, **75**, 1241-1247.

Snow, J.T., and D.R. Smith, 1990: Report on the Second
International Conference on School and Popular
Meteorological and Oceanographic Education.
Bulletin of the American Meteorological Society, **71**,
190-198.

Thompson, O.E., 1986: Summary of the AMS Workshop
on meteorology as a unifying education strategy for
improving pre-college science, mathematics, and
technology education. *Bulletin of the American
Meteorological Society*, **67**, 426-428.

Ulanski, S.L., 1993: An analysis of the liberal arts in
introductory meteorology courses. *Bulletin of the
American Meteorological Society*, **74**, 2203-2209.

Walker, J.M., editor, 1985: Weather education.
Proceedings, First International Conference on School
and Popular Meteorological Education. Royal
Meteorological Society, Bracknell, Berkshire, England,
264 pp.

•Project Atmosphere

Project Atmosphere is an educational initiative of the AMS,
designed to foster improved atmospheric education in
grades K-12. A partnership of scientists, educators,
government, and industry focuses on attracting students
into continued study of science, mathematics, and
technology. One of the features of Project Atmosphere
has been the formation of the Atmospheric Education
Resource Agent (AERA) network. At least one master
teacher in each state has been selected to act as a
resource agent. A current listing can be obtained from:

Ira Geer
American Meteorological Society
Project Atmosphere
1200 New York Avenue, Suite 410
Washington, DC 20005

Additional background information on Project Atmosphere
and the AERA network:

Houghton, D.D., 1990: Editorial: American Meteorological
Society education initiatives. *Bulletin of the American
Meteorological Society*, **71**, 648.

Houghton, D.D., 1990: Editorial: American Meteorological
Society education initiatives expansion. *Bulletin of the
American Meteorological Society*, **72**, 1551.

Smith, D.R., and I.W. Geer, 1991: Establishment of the
American Meteorological Society's Atmospheric
Education Resource Agents (AERA) program.
Bulletin of the American Meteorological Society, **72**,
612-15.

Smith, D.R., I.W. Geer, R.S. Weinbeck, and P.R. Chaston,
1991: Project Atmosphere: AMS/NOAA 1991

workshop for teachers. *Bulletin of the American Meteorological Society*, **72**, 1547-1550.

Smith, D.R., I.W. Geer, R.S. Weinbeck, and J.T. Snow, 1993: Project Atmosphere: AMS/NOAA 1992 workshop for teachers. *Bulletin of the American Meteorological Society*, **74**, 421-424.

Smith, D.R., I.W. Geer, R.S. Weinbeck, J.T. Snow, and W.H. Beasley, 1994: AMS Project Atmosphere - University of Oklahoma 1993 workshop for teachers. *Bulletin of the American Meteorological Society*, **75**, 95-100.

Project Atmosphere has produced or distributes educational materials on:

Clouds
Sunlight and Seasons
Weather Radar: Detecting Precipitation
Water Vapor and the Water Cycle
Global Climates
Hazardous Weather
Radar Reflections: Soul of a Storm - Video (24 minutes).

•DataStreme

This major precollege teacher enhancement initiative involves a 13-week distance learning course, with the goal of training Weather Education Resource Teachers. Interested teachers should apply for selection as participants for either the spring or fall semesters. Participants must be pre-college teaching professionals who live near an area served by a Local Implementation Team, a cadre of professional meteorologists or master teachers who have participated in Project Atmosphere training. Selected participants receive graduate-level academic credit for the course on the study of the atmospheric environment through the use of electronically-transmitted weather data and learning materials, combined with Study Guide readings and investigations.

American Association for the Advancement of Science (AAAS)

AAAS is actively involved with all aspects of science, mathematics, and technology education. Position papers, reference, resource, and review materials have been produced to assist teachers at all grade levels and in many academic disciplines.

Directorate for Education & Human Resource Programs
AAAS
1333 H Street, N.W.
Washington, DC 20005-4792
Phone: (202) 326-6670
Fax: (202) 371-9849
Web: www.aaas.org

- AAAS prepares an annual reference guide to more than 2500 programs and educational organizations, including 200 museums and science-technology centers. *The Sourcebook for Science, Mathematics, and Technology*

Education is published annually for \$12.95 (\$10.35 for members) from:

AAAS Books
Box 735, Dept. A55
Waldorf, MD 20604
Phone: (301) 645-5643.

- General book and software reviews, references, and announcements from the AAAS:

AAAS Science Book List 1978-1986, 1986. Compiled and edited by K. Wolff, S.M. O'Connell, and V.J. Montenegro. AAAS Publication 85-24, 568 pp. ISBN 0-87168-313-6.

Science Books and Films. ISSN 0098-3422X. A bimonthly publication of AAAS, 1515 Massachusetts Avenue, N.W., Washington, DC 20005.

Science Books and Films' Best Books for Children 1988-91, 1992. AAAS Publication 92-30H, 300 pp. ISBN 0-87168-505-1.

The Best Science Films, Filmstrips, and Videocassettes for Children, 1982. Compiled and edited by K. Wolff, J.M. Fritsch, and G.T. Todd. AAAS Publication 82-6, 140 pp. ISBN-0-87168-306-7. [For the 5-12 age range, K through 6].

The Best Books and A-V Materials for Children, 1988. Compiled and edited by S.M. O'Connell, V.J. Montenegro, and K. Wolff. AAAS Publication 82-11, 335 pp. ISBN-0-87168-316-4.

Wilms, D.M., 1985: *Science Books for Children*. American Library Association, Chicago, IL, 183 pp. ISBN 0-8389-3312-2.

- Project 2061 is a AAAS project intending to improve science, mathematics, and engineering education:

Physical and Information Sciences and Engineering: Report of the Project 2061 Phase I Physical and Information Sciences and Engineering Panel, Washington, DC, 41 pp.

Science for All Americans. A Project 2061 Report on Literacy Goals in Science, Mathematics, and Technology, 1989, 217 pp.

American Geological Institute

The American Geological Institute, through its National Center for Earth Science Education, has developed the following position statement concerning the teaching of earth science, including weather and climate:

National Center for Earth Science, 1991: *Earth Science Education for the 21st Century: A Planning Guide*. American Geological Institute, Alexandria, VA, 34 pp.

American Geological Institute
National Center for Earth Science Education
4220 King Street
Alexandria, VA 22302
Phone: (703) 379-2480

Educators Progress Service

The following materials are appropriate for instruction at the indicated grade levels. Free instructional material is at:

Educators Progress Service
214 Center Street
Randolph, WI 53956-1497
Phone: (414) 326-3126

Berger, J.L. (editor), 1993: *Educators Grade Guide to Free Video Tapes (40th edition)*. Educators Progress Service, 561 pp. ISBN 0-87708-255-3.

Diffor, J.C., and E.N. Diffor (editors), 1993: *Educators Guide to Free Filmstrips and Slides (45th edition)*. Educators Progress Service, 169 pp. ISBN 0-87708-252-9.

Haider, T.J. (editor), 1994: *Educators Grade Guide to Free Teaching Aids (40th edition) with Supplement by K.S. Nehmer*. Educators Progress Service. ISBN 0-87708-265-0.

Haider, T.J. (editor), 1993: *Educators Guide to Free Curriculum Materials (50th edition)*. Educators Progress Service, 384 pp. ISBN 0-87708-254-5.

Nehmer, K.S. (editor), 1994: *Guide to Free Computer Materials (12th edition)*. Educators Progress Service, 487 pp. ISBN 0-87708-261-8.

Parent, M.P. (editor), 1993: *Educators Guide to Free Materials (102nd edition)*. Educators Progress Service, 543 pp. ISBN 0-87708-250-2.

Staff editors, 1994: *Educators Guide to Free Science Materials (35th edition)*. Educators Progress Service, 289 pp. ISBN 0-87708-268-5.

Independent Study Courses

Several institutions offer independent study or correspondence courses in atmospheric and oceanic sciences. The introductory general-education courses have few prerequisites, and provide an opportunity for people to broaden their weather knowledge who do not have an opportunity to attend more traditional college-level courses. A listing of such courses is in the atmospheric sciences section of the index in:

National University Continuing Education Association, 1992: *The independent study catalog: A guide to continuing education through correspondence courses*. Fifth Edition, One Dupont Circle, Washington, DC, 281 pp. ISBN 1-56079-138-1.

Participating institutions include:

Ball State University, Muncie, IN 47306
Indiana University, Bloomington 47405
Oklahoma State University, Stillwater 74078
Pennsylvania State University, Univ. Park 16802
Portland State University, Portland, OR 97207
University of Arizona, Tucson 85719
University of Georgia, Athens 30602
University of Kansas, Lawrence 66045-2602
University of Missouri, Columbia 65211
University of Utah, Salt Lake City 84112
University of Washington, Seattle 98195
University of Wisconsin-Extension, Madison 53706
Weber State College, Ogden, UT 84408-4005.

National Center for Atmospheric Research (NCAR)

NCAR, with the support of the National Science Foundation, is actively involved with several educational projects. NCAR is part of a larger organization, the University Corporation for Atmospheric Research (UCAR). The NCAR and UCAR web address is www.ucar.edu.

•COMET

The Cooperative Program for Operational Meteorology, Education, and Training (COMET), is administered by UCAR and sponsored by the National Weather Service. COMET includes the development of computer-based learning modules through its Distance Learning Program. The Forecaster's Multimedia Library links a personal computer with an optical disk player which supports audio and full-motion video. This set of instructional material is distributed by Weather Information Technologies, Inc., 3300 Mitchell Lane, Suite 320, Boulder, CO 80301. Titles in the Forecaster's Multimedia Library:

Workshop on Doppler radar interpretation, December 1991.

Boundary detection and convection initiation, January 1992.

Heavy precipitation and flash flooding, November 1992.

•NCAR Global Change Instruction Program

Modules have been developed by the NCAR Advanced Study Program for college-level interdisciplinary studies of global climatic change, and earth and environmental sciences. They cover earth science to include meteorology, and are for undergraduate non-science majors.

NCAR Information and Education Outreach Program
P.O. Box 3000
Boulder, CO 80307-8600

•SkyMath

A program under development with mathematics educators to enhance the teaching of mathematics and related disciplines at the junior high school level through the use of current weather information from UNIDATA.

UCAR/UNIDATA Program Center
P.O. Box 3000
Boulder, CO 80307-8600
Phone: (303) 497-8644

•UNIDATA

This program provides current weather information to member universities and subscribers

UCAR
P.O. Box 3000
Boulder, CO 80307-8600
Phone: (303) 497-8644
Email: support@unitdata.ucar.edu

National Earth Science Teachers Association (NESTA)

NESTA is a nonprofit educational organization whose purpose is the advancement, stimulation, extension, improvement, and coordination of earth science education at all educational levels.

NESTA Membership (\$15.00)
P.O. Box 53213
Washington, DC 20009-3213

NESTA publishes *The Earth Scientist* four times a year. Each issue specializes in geology, astronomy, meteorology, or oceanography. It is edited by:

Jan Woerner
35201 Hollow Creek Drive
Yucaipa, CA 92399-5905

Many states also have both NSTA and NESTA organizations, and have publications. Contact NSTA or state education departments for more information.

National Science Teachers Association (NSTA)

NSTA is a professional organization of science teachers. In addition to the periodicals in Section 5, NSTA materials include *NSTA's Supplement of Science Education Suppliers*, which has addresses of audiovisual producers, publishers, and science equipment suppliers.

1742 Connecticut Ave., N.W.
Washington, DC 20209-1171

National Weather Association (NWA)

NWA is a nonprofit organization chartered to promote the interests of weather forecasting. The NWA annually awards Sol Hirsch Educational Grants to K-12 teachers to improve the education of students in meteorology. Information about the application process is at:

6704 Wolke Court
Montgomery, AL 36116-2134
Phone: (334) 213-0388
Email: NatWeaAsoc@aol.com
Web: www.nwas.org

Other Federal Agencies

Several Federal agencies have established education programs which provide teachers with resource materials in the form of audiovisual aids, lesson plans, activity booklets, and worksheets. Typically, these materials can be obtained at nominal cost from resource centers which may also produce newsletters or other information. Agencies with weather-related material are:

- Department of Agriculture
Global Change Programs Office, Room 60 LL
1621 North Kent Street
Arlington, VA 22209
Phone: (703) 235-9018
Fax: (703) 235-9046

- NASA
The NASA Educational Affairs Division has established a NASA Teacher Resource Center Network comprised of:
Teacher Resource Centers (TRCs).
Regional Teacher Resource Centers (RTRCs).
Central Operation of Resources for Educators (CORE).
Additional NASA education resources:
NASA Space Link.
NASA Select Television.
NASA Education Satellite Videoconferences.
Web: www.hq.nasa.gov/office/code/education.

- Universities Space Research Association (USRA)
USRA and NASA have atmospheric sciences at:
4950 Corporate Drive, Suite 100
Huntsville, AL 35806
Phone: (205) 895-0582
Fax: (205) 895-9222

Regional School Programs

Several innovative pre-college educational programs in atmospheric science have been developed by school districts. Some programs are affiliated with neighboring university departments or national organizations.

- EARTHSTORM
Earth-System Education for Science Teachers Using the Oklahoma Regional Mesonet (EARTHSTORM):
Oklahoma Climatological Survey
100 East Boyd, Suite 1210
Norman, OK 73019

- LEARN
Laboratory Experience in Atmospheric Research (LEARN) at NCAR:
P.O. Box 3000
Boulder, CO 80307-3000

- WEATHERWATCH
Dept. of Atmospheric Science
Marshak Hall, CCNY
138th Street at Convent Avenue
New York, NY 10031

- Florida EXPLORES
Experimental Program for Learning the Operations and Resources of Environmental Satellite (EXPLORES):
Dr. Paul Ruscher
Department of Meteorology
Florida State University
Tallahassee, FL 32306

4. AUDIOVISUAL MATERIALS

Weather and climate concepts can be presented effectively using visuals in many different formats, such as videos, slides, and posters. Examples of atmospheric phenomena reinforce the learning process.

Selected address lists of audio-visual suppliers can be found in the annual issue of the National Science Teachers Association's (NSTA) *Science Education Suppliers Supplement*, a supplement to *The Science Teacher* and other NSTA publications. For information, contact the NSTA at 1840 Wilson Blvd., Arlington, VA 22201-3000.

Other indexes and reference sources of educational audio-visual materials include several indexes published by the National Information Center for Educational Media (NICEM):

- *Filmstrip and slide set finder*, 1990, Medford, NJ, 3 volumes. ISBN 0-93758-15-4.
- *Film and video finder*, 1991, Third edition, Medford, NJ, 3 volumes. ISBN 0-937458-20-0.
- *Audiocassette and compact disc finder*, 1993, Third edition, Medford, NJ, 1419 pp. ISBN 0-937458-22-7.
- Klisz, A.M., (editor), 1994: *The video source book*. 16th edition, Gale Research, Detroit, MI, 2 volumes, 3988 pp. ISSN 0748-0881; ISBN 0-8103-85368 (set).
- AAAS publications (Section 3).
- Annual guides produced by Educators Progress Service, Randolph, WI (Section 3).

4.1. VIDEOCASSETTES

Title	Source	Date	Length (minutes)	Cost
A				
After The Warming, Episode One: The Fatal Flower	Ambrose Video Publishing Co.	1990	56	
After The Warming, Episode Two: Secret Of The Deep	Ambrose Video Publishing Co.	1990	56	
The Atmosphere In Motion	United Learning	1995	21	
The Atmosphere, Climate And Weather	CLEARVUE/eav	—	48	\$70.00
The Awesome Power: Floods	NOAA-NWS	1988	17	
B				
Behind The Scenes Weathercast	United Learning	1995	6	
Blown Away: Tornadoes	USA Teleproductions	1996	22	
Bringing Home The Weather	Weather Channel	—	48	
C				
Can We Control The Weather?	McGraw-Hill Text Films	—	25	
The Chase	BVE Productions, Inc.	—	42	\$23.90
Chase Highlights 98	William Reid	1998	60	\$19.95
The Chasers Of Tornado Alley	Prairie Pictures	—	48	\$19.95
Chase To Live 6-15-91	Gene Rhoden	1992	40	
Chasing El Niño	NOVA	—	60	\$29.95
Chasing The Wind	Plano, Texas TV Network	1991	27	
Climate & Seasons	Schlessinger Video	1998	—	\$29.95
The Climate Puzzle	PBS-TV	—	55	
Climate, Weather, And People	Hawkhill Associates	1997	172	
Clouds: Messengers Of The Weather	Educational Filmstrip and Video	1997	50	
Clouds & Precipitation	Coronet Films & Video	1985	15	
Clouds And What They Mean	CLEARVUE/eav	—	15	\$65.00
Cracking The Ice Age	NOVA/PBS-TV*	1998	60	\$29.95
Cyclone!	National Geographic*	1998	50	
D				
Danger's Edge (Hurricanes)	Weather Channel	1991	25	
The Deadliest Storm	KSNW-TV, Wichita, KS	1991	91	
Deadly Waters: Flood Of '94	Historic Publications	—	40	\$23.00
Discovering Our Earth's Atmosphere	Wards	1989	35	
Drought And Flood: Two Faces Of One Coin	Films for the Humanities&Science	1990	18	
E				
Earth's Air	NASA Ames Research Center	1986	27	
The Earth's Atmosphere	Coronet Films & Video	1985	14	
Electrical Skies	Joel Hartless	1998	15	\$24.95

El Niño: Drought To Deluge	Weather Channel	1992	30	
El Niño & The Link Between Oceans, Atmosphere, And Weather	CLEARVUE/eav	—	22	\$70.00
End of the Golden Weather	Bonneville Worldwide Entertain.	1998	—	\$19.95
The Enemy Wind (tornadoes)	Weather Channel	1992	25	
Everyday Weather: Hurricanes	SUNY-Brockport & Weather Ch.	1986	24	
Everyday Weather: The Sense Of Weather	SUNY-Brockport & Weather Ch.	1989	29	
Everyday Weather: Thunderstorms	SUNY-Brockport & Weather Ch.	1987	29	
Eye of the Storm: Hurricanes	Weather Channel	—	48	
Eyewitness: Weather	Dorling Kindersley Video	1996	13	
<u>F</u>				
Five Great Weather Disasters	Weather Channel	1997	50	
Flash to Bang	United Learning	1995	19	
Flood!	NOVA/PBS-TV*	1998	60	\$29.95
Flood Forecasting	EBE	1986	20	
Flood: Raging Planet	Teacher's Video Company	1998	50	\$29.95
Force Four (Hurricanes)	Weather Channel	1990	23	
Forty-six Tornadoes	Berger Productions	—	—	\$33.00
<u>G</u>				
Global Climate	National Geographic Television	1998	—	\$99.00
The Global Environment: The Greenhouse Effect	Coronet Film & Video	1988	20	
Global Forecasting	Coronet Film & Video	1985	14	
Global Warming: Future Quest	Hawkhill Associates, Inc.	—	30	\$84.55
Global Winds	Coronet Film & Video	1985	15	
The Great Chicago Flood	Explorer*	1998	30	\$29.95
Great New Jersey Coastal Storm Of the 20th Century	G. Hoffman	—	90	\$24.00
Greenhouse Effect: Is It Hot Enough For You?	PBS-TV	—	55	
<u>H</u>				
Hands-on Weather/Weather Experiments	United Learning	1998	19	\$79.95
Hands-on Weather 2/More Weather Experiments	United Learning	1999	19	\$79.95
The Hidden Dangers: Low-Water Crossing	NOAA-NWS	1996	20	
Hot Enough for You?	Coronet	1985	58	
The Hugo Video Scrapbook	WSOC-TV, Charlotte, NC	1989	60	
Hurricane	NOAA/NWS	1984	29	
Hurricane!	NOVA/PBS-TV	1998	60	\$29.95
Hurricane Andrew: The Awful Howl	Steve Wackholder	—	50	\$25.00
Hurricane Emily	Richard Horodner	—	45	\$24.95
Hurricanes Fran & Bertha	Richard Horodner	—	50	\$23.00
Hurricane Hunters	WRIN-TV	1996	50	
Hurricane Iniki	Historic Publications	—	56	\$28.00
Hurricane '95	BVE Productions Inc.	—	60	\$23.90
Hurricane Opal	Steve Wackholder	—	50	\$25.00
Hurricanes: Earth's Greatest Storm	Scott Resources, Inc.	1991	20	
Hurricanes: It's Not Just Another Storm	FEMA/Videx Corp.	1991	20	
Hurricane Strikes	Jim Leonard	—	—	\$25.00
Hurricane: The Unseen Tragedy	Dept. of Planning & Natural Resources, U.S. Virgin Islands	1990	30	
A Hurricane:Through The Eyes Of Children	How the WeatherWorks	1992	42	\$99.95
Hurricanes: The Greatest Storm On Earth	WGN-TV	1994	22	
The Hydrolologic Cycle: Water In Motion	CLEARVUE/eav	—	20	\$80.00
<u>I</u>				
In the Bear's Cage	Jack Corso	—	120	\$34.95
Investigating Weather	United Learning	1997	80	
It Sounded Like A Freight Train	WGN-TV, Chicago	1991	22	
It Sounded Like A Freight Train	WGN-TV, Chicago	1992	22	

<u>J</u>				
The Job Of A Meteorologist	United Learning	1995	19	
<u>K</u>				
Killer Tornadoes	Mdacy Enterprise Group., Inc.	1996	90	
Killer Weather	TLC and Discovery Channels	1998	55	\$29.95
<u>L</u>				
Last Chance Chase Video	William Reid	—	—	\$27.90
Lightning	NOVA/PBS-TV*	1998	60	\$29.95
Lightning Does Strike Twice	BBC-TV	1986	24	
Lightning Safety 101	National Lightning Safety Institute	1999	58	
The Long Hot Winter	Weather Channel	—	48	
<u>M</u>				
Mr. Wizard's World: Air & Water Wizardry	NASA	—	44	
<u>N</u>				
NASA: Airmen And The Weather	Ferde Grofe Films	1998	—	\$29.95
Nashville, Tennessee Tornado Survivors/Inside Story	A&E	1998	50	\$19.95
Nashville Tornado	WTUV-TV, Nashville, Tennessee	1998	22	
National Severe Storms Laboratory Program Review	NSSL	1990	15	
National Severe Storms Laboratory Chase Highlights, 1973-1986	NSSL	1990	105	
Natural Disasters	CBS Eyewitness*	1998	35	\$29.95
Nature's Fury	National Geographic*	1998	50	\$29.95
Nature's Rage	Readers Digest	1997	120	\$29.95
<u>O</u>				
Ocean Blue: Water And Weather	Films for the Humanities&Science	1996	20	
Oceans, Weather And Climate	CLEARVUE/eav	—	15	\$70.00
Oklahoma City Tornadoes	KWTV, Channel 9, Oklahoma City	1998	44	
Our Sea Of Clouds	How the WeatherWorks	1992	16	\$89.95
<u>P</u>				
The Palm Sunday Tornadoes: 30 Years Later	WSJV-TV, Elkhart, Indiana	1995	22	
Polar Weather	Ambrose Video	1998	—	\$99.95
PROFS: Flash Floods At Cheyenne, Wyo.	NOAA/NWS-ERL	1986	11	
PROFS: Severe Weather Highlights	NOAA-ERL	1987	18	
<u>R</u>				
Radar Reflections: Soul Of A Storm	AMS/Project Atmosphere	1994	24	
Raging Planet: Avalanche	Discovery Channel ⁺	1998	50	\$29.95
Raging Planet: Flood	Discovery Channel ⁺	1998	50	\$29.95
Raging Planet: Hurricane	Discovery Channel ⁺	1998	50	\$29.95
Raging Planet: Lightning	Discovery Channel ⁺	1998	50	\$29.95
Raging Planet: Tidal Wave	Discovery Channel ⁺	1998	50	\$29.95
Raging Planet: Tornado	Discovery Channel ⁺	1998	50	\$29.95
The Restless Sky	NASA	1989	16	
The Return Of The Child: The Effects Of El Niño	Films for the Humanities&Science	1990	26	
Rain Or Shine: Understanding Weather	CLEARVUE/eav	—	15	\$70.00
Romancing The Storm	Legendary Storms Video	—	60	\$34.95
<u>S</u>				
Savage Skies: Fire And Rain	Teacher's Video Company	1998	55	\$29.95
Savage Skies: Monsters Of The Deep	Teacher's Video Company	1998	57	\$29.95
Savage Skies: Riders On The Storm	Teacher's Video Company	1998	60	\$29.95
Savage Skies: The Winter's Tale	Teacher's Video Company	1998	58	\$29.95
Severe Storms	Scott McPartland	—	30	\$20.00
Secrets Of The Tornado (2 videos)	Environmental Films	1999	120	\$49.95
Secrets Of The Unknown: Tornadoes	MPI-Home Video	1989	30	
Severe Weather	United Learning	1995	15	
Severe Weather Safety	United Learning	1996	24	

Severe Weather Safety: Watch For The Warning

	United Learning	1996	25	
Sky On Fire	The Weather Channel*	1998	38	\$29.95
Spencer, South Dakota Tornado	Bill Reid	1998	60	\$19.95
Storm Alert: Hurricane In Hawaii	Oahu Civil Defense/HTV	1994	18	
Storm Chase Highlights	Jim Leonard	—	—	\$28.00
Storm Spotter's Video Field Guide	Dave Oliver	—	—	\$26.95
Storms	Lucerne Media	1992	24	
Stormwatcher	Gene Rhoden	—	45	\$31.95
Storm Watcher	Texas Severe Storm Association	—	30	\$27.90
Stormwatcher: A Video Spotters Guide	Gene Rhoden	1994	90	
Survival In A Winter Storm	Local Civil Defense	—	27	

T

Target Tornado: The Science Of Storm Chasing

	The Weather Channel	—	45	\$29.95
Tell Me Why - Water And Weather	Tell Me Why Sales Company	1997	13	
Telling the Weather	National Geographic Television	1998	—	\$79.00
10 Inches Of Partly Cloudy	WGN-TV, Chicago	1993	22	
Terrible Tuesday	NOAA-NWS	1984	24	
Thunderstorms: Nature's Fury	Scott Resources, Inc.	1991	20	
Tornado	Environment Canada & Crown Video Duplication, Inc.	1987	25	
Tornado!	NOVA/PBS-TV*	1998	60	
Tornado Alert: What You Need To Know	Films for the Humanities&Science	—	45	\$89.95
Tornado Alive	Tornado Alive	1986	—	
Tornado Alley	The History Channel*	1998	50	\$29.95
Tornado Alley	National Geographic	1988	13	
Tornado Chasers	A&E*	1998	50	\$29.95
Tornadoes!!	Norman Berger Productions	—	—	\$32.95
Tornadoes: The Entity	Teacher's Video Company	1998	60	\$29.95
Tornado! Hurricane! Flood!: Wonders Of Weather	Discovery Channel*	1998	60	\$29.95
Tornado -The Science Of Storm Chasing	The Weather Channel*	1998	45	\$29.95
Tornado Spotters Training Guide	NOAA-NWS	1988	22	
Tornado Video Classics	Tornado Project	1992	120	
Tornado Video Classics	Tornado Project	1992	39	
Tornado Video Classics	Tornado Project	1992	22	
Tornado Video Classics III	Tornado Project	1996	120	
Tornado Warning 2	Cressen, TX	—	—	\$34.90
Torrents of Death	The History Channel*	1998	50	\$29.95
Twister	NOAA Films Loan	—	27	
Twister	Warner Brothers*	1998	113	\$29.95
Twister Chaser 1996	William Reid	1996	60	\$19.95
Twister: Fury on the Plain	Twister	—	60	\$18.95

U

The Unforgiving Sky (Water/drought)	Weather Channel	991	23	
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V

Violent Side of Nature	Scott McPartland	—	60	\$30.00
Violent Storms	Coronet	—	15	

W

Warming Warning	Media Guild	1985	52	
War And Weather	Ambrose Video	1998	—	\$99.95
Water Vapor: The Unseen Weather	AMS/Project Atmosphere	—	16	
Weather	CBS Eyewitness*	1998	35	\$29.95
Weather Chronicles	Chip Taylor Communications	—	30	\$29.95
Weather Class With Dr. Neil Frank	Lucerne Films	1992	30	
Weather And Climate	Troll Associates	1996	88	
Weather: Come Rain, Come Shine	National Geographic Television	1998	—	\$79.00
Weather Dynamics	Barr Films	1990	20	
Weather Forecasting	International Video Network	1996	14	
Weather Geokit (3 tapes)	National Geographic Television	1998	—	\$199.00

Weather's Greatest Disasters-Superstorms

	Crocus Entertainment, Inc.	1990	30	
The Weather People	Barr Films	1988	15	
Weather Problems And The Environment	Lucerne Films	1992	12	
Weather Report Girl Part 1	Right Stuf	—	—	\$24.99
Weather Safe Training Tape	United Learning, Sealls	1996	20	
Weather Systems	Tell Me Why Sales Co.	1994	40	\$39.99
Weather Systems (Spanish)	Tell Me Why Sales Co.	1996	40	
Weather Systems In Motion	Coronet	1985	15	
Weather Watchers	Instructional Video	1996	8	
When Lightning Strikes	WGN-TV, Chicago	1992	22	
Which Way Weather	Bo Peep Productions	1995	15	
Why Planes Crash (Downbursts)	CBS-TV	1988	12	
Without Warning: Galveston Hurricane	Weather Channel	—	48	
Wonders Of Weather: Deserts	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Forecasting	Ambrose Video	1996	100	
Wonders Of Weather: Hurricane	Ambrose Video	1997	100	
Wonders Of Weather: Lightning	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Mystery Of Fog	Ambrose Video	1996	100	
Wonders Of Weather: Rain and Flood	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Snow	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Signs In The Sky	Ambrose Video	1996	100	
Wonders Of Weather: Splendor In The Sky	Ambrose Video	1996	100	
Wonders Of Weather: Things That Fall	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Tornado	Ambrose Video	1997	100	
Wonders Of Weather: The Weather Machine	Ambrose Video	1996	100	
Wonders Of Weather: Wind And Waves	Ambrose Video	1996	100	
Wonders Of Weather (6 tapes)	Ambrose Video	1998	—	\$495.00
The Wrath Of Typhoon Omar	Jim Leonard	—	—	\$24.95
Y				
Year In Review	The Weather Channel*	1995	50	
Year In Review	The Weather Channel*	1996	50	

*Available from Teacher's Discovery

*Available from Teacher's Video Company

4.2. ADDRESSES FOR VIDEO DISTRIBUTORS

Berger Productions
1740 View Point Terrace
P.O. Box 935
Cannon Beach, FL 97110-0935
Phone: (800) 433-7396

BVE Productions, Inc.
P.O. Box 2249
Livonia, MI 48151-2249
Phone: (800) 632-1700

Chip Taylor Communications
15 Spollett Drive
Derry, NH 08038-5728
Phone: (800) 867-2447

Coronet/MTS Film and Video
108 Wilmot Road
Deerfield, IL 60015

Jack Corso
P.O. Box 650
Harrison, NY 10528

EBE
Encyclopedia Britannica Education Corp.
Films and Video
425 North Michigan Avenue
Chicago, IL 60611
Phone: (800) 621-3900

Environmental Films
The Tornado Project
Box 302
St. Johnsbury, VT 05819

Films for the Humanities & Science
P.O. Box 2053
Princeton, NY 08543-5126

Joel Hartless
P.O. Box 778
Joshua, TX 76058
Phone: (888) 405-0073

Hawkhill Associates, Inc.
125 E. Gilman St.
P.O. Box 1029
Madison, Wisconsin 53701-1029
Phone: (800) 422-4295

Historic Publications
P.O. Box 21497
Charleston, NC 29413-1496

G. Hoffman
P.O. Box 1341
Beach Haven, NJ 08008
Phone: (609) 492-3815

Richard Horodner
10423 S.W. 153 Street
Miami, FL 33157

How the WeatherWorks
1522 Baylor Avenue
Rockville, MD 20850
Phone: (301) 762-7669

KWTV Channel 9
7401 North Kelley
Oklahoma City, OK 73111
Phone: (405) 843-6641

Legendary Storms Video
Kill Devil Hills, NC 27948
Phone: (919) 261-3881

Jim Leonard
P.O. Box 720283
Norman, OK 73070

McGraw-Hill Films
330 West 42nd Street
New York, NY

Scott McPartland
63-127 Fitchett Street
Rego Park, NY 11374

NASA
Lyndon B. Johnson Space Center
Photographic Technical Laboratory
Audiovisual Office, Code JL-13
Houston, TX 77058

National Lightning Safety Institute
P.O. Box 778
Louisville, CO 80027-0778
Phone: (303) 666-8817
Fax: (303) 666-8786
Email: rkithil@ix.netcom.com
Web: www.lightningsafety.com

National Severe Storms Laboratory (NSSL)
1313 Halley Circle
Norman, OK 73069
Web: www.nssl.noaa.gov

Dave Oliver
P.O. Box 3372
Amarillo, TX 79116
Phone: (800) 383-1010

Prairie Pictures
P.O. Box 122020
Arlington, TX 76012

William Reid
5920 Pat Avenue
Woodland Hills, CA 91367

Gene Rhoden
611 Ridgedale Drive
Richardson, TX 75080

Teacher's Discovery
Phone: (888) 977-2436
Fax: (602) 860-8650

Teacher's Video Company
Phone: (800) 262-8837
Fax: (602) 860-8650

Texas Severe Storm Association
P.O. Box 122222
Arlington, TX 76012

Tornado Alive
Box 111
Minneapolis, MN 55440

Tornado Warning 2
P.O. Box 309-w
Cressen, TX 76035

Twister
P.O. Box 461-T
New York, NY 10023

Steve Wackholder
1501 NE 191st. Street #407
North Miami Beach, FL 33179

Wards Modern Learning Aids
P.O. Box 302
Rochester, NY 14603

United Learning, Inc.
633 W. Howard Street
P.O. Box 48718
Niles, IL 61714-0718
Phone: (800) 424-0362

WGBH-TV
P.O. Box 2284
South Burlington, VT 05407-2284

4.3. SLIDES

Sets of 35-mm slides are available from the following sources. Many sets have an accompanying teacher manual, and some have an audiocassette to use the slide set in an automatic or filmstrip mode. This listing does not include slide sets for instructors who adapt a text for classroom use; they are available from book sales representatives or publishers.

- Cloud Types*

Ward's Natural Science Establishment, Inc.
5100 West Henrietta Road
P.O. Box 92912
Rochester, NY 14692-9012

- The Everyday Weather Project*

Six slide sets plus narrative audiocassettes from the State University of New York at Brockport:

1. Sensing and Analyzing the Weather
2. Weather Systems
3. Weather Forecasting
4. Weather Satellites
5. Weather Radar
6. Hazardous Weather: Hurricanes

- A Look at the Tornado and Other Local Storms*

A 63-slide program produced by the National Disaster Preparedness Program, National Weather Service, 1982, Catalog #A08135.

National Audiovisual Center
Order Section
General Services Administration
Washington, DC 20409

- Meteorology Series*

A set of 12 slides is available from:
Educational Images Ltd.
Order Department
P.O. Box, 3456, West Side Station
Elmira, NY 14905

- Meteorology*

Five meteorology slide sets have been prepared by:
JLM Visuals
Grafton, WI 53024

- Natural Hazards*

17 slide sets depicting natural hazards around the world have been prepared by NGDC. Each set of 20 slides covers one of the following topics: Earthquakes, hurricanes, landslides, tsunamis, typhoons, and volcanoes. Costs are \$18 to \$40 per set. Teachers may order sets of multiple-choice questions (with answers) free of charge, from:

National Geophysical Data Center (NGDC)
NOAA, Code E/GCI
325 Broadway
Boulder, CO 80303
(303) 497-6277

- The Stories Clouds Tell*

Scenes that appear in the text reference by M.A. LeMone in Section 5.1 are available for \$49.95 from:

Project Atmosphere
American Meteorological Society
1701 K Street, N.W., Suite 300
Washington, DC 20006-1509

- Storm Spotter Slide Sets*

36 slides with transcript are available from:

Gene Rhoden
611 Ridgedale
Richardson, TX 75080

- Stormwatcher*

Four slide sets on severe weather are available from:

Tim Marshall
4041 Bordeaux Circle
Flower Mound, TX 75028-7050

- Urban Climate*

An 80-slide set is available from:

Fred Bartenstein
Dayton Climate Project
City Manager's Office
P.O. Box 22
Dayton, OH 45410

4.4. OVERHEAD TRANSPARENCIES

Sets of ready-to-use transparencies are available for weather-related subjects. This list does not include transparency sets tailored to a given textbook and furnished by the book publisher.

- Earth Science on File*

A loose-leaf ring binder with line diagrams for instructional purposes. Permission is granted to copy, except if the resulting work is to be sold. It contains a section titled 'Air and Oceans.'
Facts on File, Inc.

460 Park Avenue South
New York, NY 10016

- Overhead Transparency Manual*

Contains 20 overhead transparencies with the same graphics as the *Mirage Wall Chart* in the next section.

•*USA Today/AMS Transparency Set*

Project Atmosphere (AMS) and *USA Today* produced a 30-transparency set from *The Weather Book* by Jack Williams. Available from:

American Meteorological Society
Project Atmosphere
1200 New York Avenue, Suite 410
Washington, DC 20005

•*Weather*

Contains 12 color transparencies and 20 reproducible pages and guide.

Ortlieb, E.P, and R. Cadice, 1986. Milliken Publishing Co., St. Louis, MO. ISBN 1-55863-089-9. For Grades 5-9.

4.5. WALL CHARTS AND POSTERS

Large, multicolored wall charts and posters can be integrated into teaching weather units and purchased at a modest cost. Most show examples of cloud types.

•*The Atmosphere*

55 by 33-inch poster compiled by K. Foley, \$14.50. ISBN 90-72167-01-5.

•*The Global Climate*

54 by 34-inch poster compiled by M. Tankee and J. V. Gulike, 1989, \$14.50. ISBN 90-72167-03-1.

One or both of these posters are available through the AMS; discounts for groups of 10 copies or more. Published by Mirage Publishing in The Netherlands.

American Meteorological Society
45 Beacon Street
Boston, MA 02108-3693
Phone: (617) 227-2425
Fax: (617) 742-8718
Web: www.ametsoc.org

•*Clouds: A Guide to the Sky*

A.L. Rangno, 3rd Edition, 1989, \$9.00. It is available from two sources:

Sky Guide
P.O. Box 30027
Greenwood Station
Seattle, WA 98103-0027
Phone: (206) 782-8485

Wind and Weather
Mendocino, CA 95460

•*Cloud Chart Collection*

These cloud charts were developed by How the WeatherWorks and the National Weather Association. The set of three 12 by 24-inch posters is available at \$9.00 from two sources:

How the WeatherWorks
1522 Baylor Avenue
Rockville, MD 20850
Phone: (301) 762-7669
Web: www.weatherworks.com

National Science Teachers Association
1742 Connecticut Ave., N.W.
Washington, DC 20209-1171

•*Cloud Charts*

Cloud Charts, Inc.
P.O. Box 29294
Richmond, VA 23233
C.C. Marketing
P.O. Box 1122
Glen Allen, VA 23080
Phone: (804) 262-7481

•*Electrifying*

Poster of lightning flash striking a large city. \$4.95 plus shipping and handling.

Teacher's Discovery
Phone: (888) 977-2436

•*The Environment Chart*

55 by 31-inch poster with 42 color posters.
For Spacious Skies
54 Webb Street
Lexington, MA 02173

•*Lightning Danger! Stay Away From Trees During Thunderstorms!*

16 by 20-inch poster of lightning striking a nearby tree, and short text on lightning safety rules.

National Severe Storms Laboratory, NOAA
1313 Halley Circle
Norman, OK 73069

•*National Oceanic and Atmospheric Administration (NOAA)*

'NOAA cloud chart.'
'Natural hazard watch and warning' (NOAA/PA 86001).
'Explanation of the daily weather map.'
Superintendent of Documents
Washington, DC 20418

•*Power, Speed, Danger, Beauty*

Poster of lightning flash striking the ground in Colorado. \$11 postpaid.

Ken Langford
Random Video Productions
16385 West 8th Avenue
Golden, CO 80401
Phone: (303) 278-9441

•*Tornadoes*

A series of three posters on tornadoes:

'Fujita F-scale Color Set'

'Close Encounters Set'

'Fujita F-scale Black and White Set'

The Tornado Project

Box 302

St. Johnsbury, VT 05819

Web: www.tornadoproject.com

•*World Meteorological Organization Cloud Sheet*

American Meteorological Society

45 Beacon Street

Boston, MA 02108-3693

Phone: (617) 227-2425

Fax: (617) 742-8718

Web: www.ametsoc.org

5. PRINTED MATERIALS

A limited number of popular weather and climate books are usually available at local bookstores. Many textbooks can be ordered and purchased from bookstores catering to colleges. University and public libraries have numerous popular meteorology books and periodicals. Participating libraries within the Federal Depository system are sources of numerous weather-related government publications and climatological data.

Weatherwise magazine has many interesting articles and features. Pertinent articles also appear in *The Physics Teacher*, *The Science Teacher*, *The Earth Scientist*, *Science Scope*, and *Science and Children*. These articles contain useful information for demonstration, experiments, and other learning experiences for preschool through college. *Science and Children* contains a section "Geography and Weather" by H.M. Mogil and H.T. Collins. Reviews of pertinent books appear in *Science Books and Films* under "Earth Science."

5.1. GENERAL INTEREST - Adult Level

The following books target the adult non-technical reader and would not necessarily be considered textbooks. These general interest books may either focus on one area in the atmospheric sciences, or they may be sufficiently broad, and explain weather phenomena. Some books document interesting historical weather events or the history of meteorology. Many are attractive books, and contain photographs, diagrams, and other visual features.

A

Acid Rain in Europe—Counting the Cost

ApSimon, H., D. Pearce, and E. Ozdemiroglu, editors, 1997. Earthscan Publications, London, xii + 190 pp., ISBN 1-85383-443-2. £19.95.

All About Lightning

Uman, M.A., 1986. Dover Publishing Inc., New York, 192 pp., ISBN 0-486-25237-X. \$5.95.

The Amateur Meteorologist: Exploration and Investigations

Mogil, H.M., 128 pp., How the WeatherWorks, 1522 Baylor Avenue, Rockville, MD 20850. \$6.95.

Atmosphere, Weather and Climate

Barry, R.G., and R.J. Chorley, 1998. Routledge. Hard cover: ISBN 0-415160197, \$40.00. Paperback: ISBN 0-415160197, \$100.00.

Atmospheric Halos

Tape, W., 1994. American Geophysical Union, Washington, DC 20009, 143 pp., ISBN 0-87590-834-9. \$40.00.

The Audubon Society Field Guide to North American Weather

Ludlum, D.M., 1991. Alfred A. Knopf, New York, 656 pp., ISBN 0-679-40851-7. \$18.00.

B

Blizzards & Snowstorms of Washington, D.C.: Photo History 1888 to 1993

Historic Enterprises, P.O. Box 2786, Merrifield, VA 22116-2786, \$19.95.

Braving the Elements: The Stormy History of American Weather

Laskin, D., 1997. Anchor Books, ISBN 0-38546956-X. \$12.95.

C

Climate, Change and Risk

Downing, T.E., and A.A. Olsthoorn, editors, 1998. Routledge, ISBN 0-41517311. \$115.00.

Climate Process and Change

Bryant, E., 1997. Cambridge University Press, xvi + 209 pp. Hard cover: ISBN 0-5251-48189-9, \$59.95. Paperback: ISBN 0-521-48440-5, \$22.95.

The Climate and Weather of Florida

Henry, J.A., K. Portier, and J. Coyne, 1998. Pineapple Press. Hard cover: ISBN 1-56164036-0, \$27.95. Paperback: ISBN 1-5614037-9, \$17.95.

The Climate of Fear: Why We Shouldn't Worry About Global Warming

1998. Cato Institute, ISBN 1-882577655. \$9.95.

Climates and Weather Explained

Linacre, E., and B. Geerts, 1997. Routledge, London, x + 431 pp. Hard cover: ISBN 0-415-12519-7, £87.93. Paperback: ISBN 0-415-12520-0, £27.96.

Compete Idiot's Guide to the Weather

1998. Alpha Books. ISBN 0-028627091, \$16.95.

Complete Weather

Engelbert, P., 1997. UXL Publishing, ISBN 0-810397887-0. \$64.95.

Crazy Weather

McNichols, C.L., 1994. University of Nebraska Press, ISBN 0-80328319-2. \$7.95.

D

Decade-to-Century-Scale Climate Variability and Change: A Science Strategy

National Research Council, 1998. National Academy Press, ISBN 0-52163332X. \$39.00.

Dick Goddard's Weather Guide and Almanac for Northeast Ohio

Goddard, D., 1998. Gray and Company, ISBN 1-886228124. \$13.95.

Does the Weather Really Matter—The Social Implications of Climate Change

Burroughs, W.J., 1997. Cambridge University Press, xi + 230 pp., ISBN 0-521-56126-4. \$24.95.

E

Earth from Above: Using color-coded satellite images to examine the global environment.

Parkinson, C.L., 1997: University Science Books, 175 pp., ISBN 0-935702-41-5. \$24.00.

Economic Value of Weather and Climate Forecasts

Katz, R.W., and A.H. Murphy, editors, 1997. Cambridge University Press, xv + 222 pp., ISBN 0-521-43420-3. \$49.95.

El Niño: Stormy Weather for People and Wildlife

Arnold, C., 1998. Clarion Books, ISBN 0-395776023, \$16.00.

F

Facts on File Dangerous Weather Series

Allaby, M. Facts on File Publishing.

-*Air: The Nature of Atmosphere and Climate*, 1992, 208 pp., ISBN 0-8160-2525-8.

-*Blizzards*, 1997, ISBN 0-81603518-0, \$24.95.

-*A Chronology of Weather*, 1997, ISBN 0-816035210, \$24.95.

-*Dangerous Weather: Includes A Chronology of Weather, Tornadoes, Hurricanes, Blizzards, Floods, Droughts*, 1998, ISBN 0-816035156, \$149.70.

-*Droughts*, 1998, ISBN 0-81603519-9, \$24.95.

-*Floods*, 1997, ISBN 0-81603520-2, \$24.95.

-*Hurricanes*, 1997, ISBN 0-81603516-4, \$24.95.

-*Tornadoes*, 1997, ISBN 0-81603517-2, \$24.95.

The Farm Weather Handbook

Schwanz, L.H., 1997. Lessiter Publications, ISBN 0-94407907-5. \$24.95.

A Field Guide to the Atmosphere

Schaefer, V.J., and J.A. Day, 1981. Houghton Mifflin Co., Boston, 359 pp., ISBN 0-395-24080-8.

Floods and Droughts: The New Zealand Experience

Mosley, P., and C.P. Pearson, 1997. New Zealand Hydrological Society, Wellington, New Zealand, vii + 206 pp., ISBN 0-473-047135-7. NZ\$29.90.

Florida Hurricanes and Tropical Storms

Williams, J.M., and I.W. Duedall, 1997. University of Florida Press, 148 pp., ISBN 0-8130-1515-4.

Fodor's World Weather Guide

Pearce, E.A., and C.G. Smith, 1998. Random House, ISBN 0-375703497. \$17.95.

G

Global Warming: The Complete Briefing

Houghton, J.T., 1997. Cambridge University Press, xiii + 251 pp., ISBN 0-521-62932-2. \$22.95.

Glossary of Weather and Climate

Geer, I.W., 1996. American Meteorological Society, Boston, 272 pp., ISBN 1-878220-21-7.

Great Blizzards of New York City

Historic Enterprises, P.O. Box 2786, Merrifield, VA 22116-2786. \$26.95.

The Great Flood of 1993

Changnon, S.A., editor, 321 pp., Westview Press, ISBN 0-8133-2619-2. \$65.00.

H

The Handy Weather Answer Book

Lyons, W.A., 1996. Visible Ink Press, 397 pp., ISBN 0-78761034-8. \$16.95.

Phone: (800) 776-6265

The Heat is On: The Climate Crisis, the Cover-Up, the Prescription

Gelbspan, R., 1998. Perseus Books, ISBN 0-738200255. \$13.00.

Historical Perspectives on Climate Change

Fleming, J.R., 1998. Oxford University Press, ISBN 0-195078705. \$45.00.

The History of Weather

Williams, J.T., 1998. Nova Science Pub., ISBN 1-560726229. \$16.95.

How the Weather Really Works

Bros, P., 1994. Financial Book Partners, ISBN 0-96277694-7. \$34.00.

How Weather Works & Why

Lynott, R.E., 1994. Gadfly Press, 8925 SW Homewood, Portland, OR 97225, 144 pp., ISBN 0-6180771-7. \$40.00.

How Weather Works (How It Works)

De Millo, R., 1994. Ziff Davis Press, ISBN 1-56276228-1. \$19.95.

Human Impacts on Weather and Climate

Cotton, W.R., and R.A. Pielke, 1995. Cambridge University Press. Hard cover: ISBN 0-52149592-X, \$64.95. Paperback: ISBN 0-52149929-1, \$25.95.

Hurricanes!

Chaston, P.R., 1996. Chaston Scientific, Inc., P.O. Box 758, Kearney, MO 64060. ISBN 0-9645172-2-1. \$29.00

Phone: (816) 628-4770

Email: chaston111@aol.com

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Giko Publishing, P.O. Box 2175W, Norman, OK 73070-2178, 170 pp., ISBN 0-9649527-1-8. \$14.95.

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Simon & Schuster, 524 pp., \$27.50.

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The Sailor's Weather Guide
Markell, J., 1995. Sheridan House, ISBN 0-92448691-0. \$19.95.

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ASTER Press, Inc., P.O. Box 1233, Ft. Collins, CO 80522-1233, ISBN 0-9625986-0-7. \$21.00.

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Irish Books and Media Inc., 149 pp., \$14.45.

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Weather Wisdom: Proverbs, Superstitions, and Signs

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 -*Pink Snow and Other Weird Weather (Level 2)*, Dussling, J., and H. Petach, 1998. Hard cover: ISBN 0-448418878, \$13.89. Paperback: ISBN 0-448418584, \$3.99.
 -*Storm Chasers: Tracking Twisters*, Herman, G., and L. Schwinger, 1997, ISBN 0-44841638-7. \$13.99.
 -*Storm Chasers: Tracking Twisters (Level 3)*, Herman, G., and L. Schwinger, 1997, ISBN 0-44841624-7. \$3.95
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All About the Weather (Early Birds)
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 Weigelt, U., N. D'Aujourd'Hui, and J.A. James, 1998. North South Books. Hard cover: ISBN 0-73510478, \$55.01. Paperback: ISBN 0-735810486, \$16.01.

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 Mogil, H.M., 1995. How the Weatherworks, ISBN 1-88701349-0. \$15.95.

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 Dudko, M.A., M. Larsen, and W. Langley, 1995. Lyrick Studios, ISBN 1-57064037-8. \$3.95.

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 Baker, K., 1996. Merlin Books Limited, ISBN 0-86303676-7. \$10.01.

Blizzards (New True Books)
 Erlbach, A., 1995. Childrens Press. Hard cover: ISBN 0-51601073-5, \$19.00. Paperback: ISBN 0-51641073-3, \$5.50.

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 Christian, S., and A. Felix, 1997. John Wiley & Sons, ISBN 0-47115290-0. \$12.95.

Chloe
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 -*Chloe's Snowy Day*, ISBN 1862330468.
 -*Chloe's Sunny Day*, Mitra, A., ISBN 186233031X.
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 Crews, D, 1999. Harcourt Brace, ISBN 0-152019979. \$13.01.

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 Herd, T., 1999. Stackpole Books, ISBN 0-811727165. \$14.95.

Don't Blame the Weatherman
 Gikofsky, I., 1992. Avon Books, New York, 102 pp., ISBN 0-380-76720-1.

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Elmer's Weather
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Explore the World of Forces of Nature
 Ganieri, A., 1991. Golden Press, New York, 46 pp., ISBN 0-307-15602-8. Part of *Explore the World of . . .* series.

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 -*Blizzards*, Burba, L.N., 1998. Powerkids Press, ISBN 08233952916. \$55.01.
 -*Electrical Storms*, 1999. Rosen Pub. Group, ISBN 0823952940. \$20.01.
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- How's the Weather*
 Kahl, J.D., Lerner Publications Co., Minneapolis.
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 - Storm Warning: Tornadoes and Hurricanes*, 1993, 64 pp., ISBN 0-8225-2527-5.
 - Thunderbolt: Learning About Lightning*, 1993, 56 pp., ISBN 0-8225-2528-3.
 - Weather Watch: Forecasting the Weather*, 1996, ISBN 0-82252529-1. \$21.27.
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 Supraner, R., C. Studio, and D. Davidson, 1997. Troll Communications, ISBN 0-81674206-5. \$4.95.
- Ice Caps and Glaciers*
 Twist, C., 1993. Franklin Watts, New York, 32 pp., ISBN 531-17396-8. Part of *Hands on Science* series.
- I'd Like to Be a Meteorologist: Learning About the Weather, Seasons, Water Cycle, and Clouds*
 Twin Sisters Productions, 1996, ISBN 1-57583021-3. \$9.98 for book and cassette.
- It's Raining, It's Pouring*
 Eagle, K., and R. Gilbert, 1998. Whispering Coyote Press, ISBN 1-580890172. \$6.95.
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Snowflake Bentley: Man of Science and God, the Story of an Ingenious Vermonter

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Kierein, T., 1994. National Geographic Society, 10 pp., ISBN 0-7922-2782-4. Part of set 10 of *National Geographic Action Book* series. *Weather* is packaged as a two-book pop-up set with *African Animal Giants*. \$34.00.

Weather

Kerrod, R., 1997. Lorenz Books, ISBN 1-85967189-6. Part of *Learn About* series. \$7.95.

Weather

Kerrod, R., 1998. Gareth Stevens, ISBN 1-8836820886. Part of *Young Scientist Concepts and Projects* series. \$22.60.

Weather

1997. Readers Digest, ISBN 0-89577975-7. Part of *Reader's Digest Explores Science & Nature* series. \$24.95.

Weather

Saunders-Smith, G., 1998, Pebble Books. \$13.25 each.
-Clouds, ISBN 156-657774.
-Lightning, ISBN 1560657790.
-Rain, ISBN 156066657782.

- Sunshine*, ISBN 1560657804.
- Weather (Accelerated Reading Program Grades 1-2)*
Cutting, B., 1996. Wright Group, ISBN 0-78025242-X. \$7.00.
- Weather Around You (Geography Starts Here)*
Royston, A., 1998. Raintree/Steck Vaughn, ISBN 0-81725115-4. \$22.11.
- Weather Channel*
-*Hurricanes*, Hood, S., 1998, Simon Spotlight, ISBN 0689820178. \$3.99.
-*Lightning! And Thunderstorms*, Graf, M., 1998, ISBN 0689820186, \$3.99.
-*The Sun*, Barkan, J., 1999, ISBN 0689820208, Aladdin Paperbacks, \$3.99.
- Weather and Climate*
Mason, J., 1991. Silver Burdett Press, Englewood Cliffs, NJ, 48 pp., ISBN 0-382-23225-4. Part of *Our World* series.
- Weather and Climate*
Purvis, G., and A. Purvis, 1983. The Bookright Press, New York, 48 pp., ISBN 0-531-04788-1. Part of *Planet Earth* series.
- Weather and Climate*
Silverstein, A., V. Silverstein, and L.S. Nunn, 1998. Twenty First Century Books, ISBN 0-761332235. Part of *Science Concepts* Series. \$23.40.
- Weather and Climate*
Taylor, B., 1995. Kingfisher Books, New York, 32 pp., ISBN 1-85697626-2. Part of *Young Discoverers* series. \$13.90.
- Weather: Drama of the Heavens (Discoveries)*
Chaboud, R., 1996. Harry N. Abrams, ISBN 0-81092878-7. \$12.95.
- Weather Everywhere*
Casey, D., and J. Gilmore, 1995. Simon and Schuster (Juvenile), ISBN 0-02717777-7. \$15.00.
- Weather Explained: A Beginner's Guide to the Elements*
Elsom, D.M., 1997. Henry Holt & Company, ISBN 0-80504875-8. Part of *Your World Explained* series. \$18.95.
- Weather Forecaster*
Taylor-Cork, B., 1992. Gloucester Press, New York, 32 pp., ISBN 0-531-17267-8. Part of *Expert* series.
- The Weather Genie*
Laurie, J., 1998. Nature Pub. House, ISBN 9578741790. \$8.95.
- Weather: An Introduction to Clouds, Storms, and Weather Patterns*
1998. Waterford Press, ISBN 1-889903302. Part of *Pocket Naturalist* series. \$7.95.
- The Weather and Its Secrets*
1998. Readers Digest, ISBN 0-762100842. \$20.01
- Weather and Its Work*
Lambert, D., and R. Hendy, 1984. Orbis Publishing Co., Ltd., London, 64 pp., ISBN 0-87196-987-4. Part of *World of Science* series.
- Weather (Let's Investigate Science)*
Kerrod, R., and T. Evans, 1994. Marshall Cavendish Corporation, ISBN 1-85435630-5. \$25.64.
- Weather (Little Princess Board Books)*
Ross, T., 1995. Red Wagon, ISBN 0-15200320-7. \$6.00.
- Weather (Nature Company Guides)*
Burroughs, W.J., R. Crowder, T. Robertson, and E. Vallier-Talbot, 1996. Time Life Education, ISBN 0-80949374-8. \$29.95.
- Weather: The Nature Company Journals*
Time Life Education, ISBN 0-80949380-2. \$14.95.
- Weather and Other Facts About Weather (You'd Never Believe It, But)*
Taylor, H., and S. Sweet, 1999. Copper Beech Books, ISBN 0-761332537. \$21.90.
- Weather: Poems (An I Can Read Book)*
-Hopkins, L.B., and M. Hall, 1994. Harpercollins Juvenile Books, ISBN 0-06021463-5. \$14.95.
-Hopkins, L.B., and M. Hall, 1994. Harpercrest, ISBN 0-06021462-7. \$14.89.
- Weather Report*
Merk, A., 1994. Rourke Publishing Group. \$14.60 each.
-*Clouds*, ISBN 0-86593389-8,
-*Rain, Snow, and Ice*, ISBN 0-86593390-1.
-*Storms*, ISBN 0-86593386-3.
-*Studying Weather*, ISBN 0-86593385-5.
-*Weather Signs*, ISBN 0-86593388-X.
-*The Weather and Us*, ISBN 0-86593387-1.
- Weather and Seasons (Bip Quiz Series)*
MacKenzie, F., 1995. Sterling Publications, ISBN 0-80690937-4. \$2.95.
- The Weather Sky*
McMillan, B., 1996. Demco Media. Hard cover: ISBN 0-60610025-3, \$12.75. Paperback: ISBN 0-37448266-7, \$6.95.
- Weather Walkabout*
Pluckrose, H., 1994. Childrens Press. Hard cover: ISBN 0-51608123-3, \$17.60. Paperback: ISBN 0-51640123-8, \$4.95.
- Weather Watch*
Steele, P., 1991.
-*Wind*, ISBN 0531-11024-9.
-*Storms*, ISBN 0531-11026-5.
-*Heatwave*, ISBN 0531-11023-0.
-*Frost*, ISBN 0531-11025-7.
- Weather Watch (First Science)*
Rowe, J., and M. Perham, 1996. Childrens Press. Hard cover: ISBN 0-51608142-X, \$19.90. Paperback: ISBN 0-51648142-8, \$4.95.
- Weather Words and What They Mean*
Gibbons, G., 1990. Holiday House, New York, 30 pp., ISBN 0-8234-0805-1.
- Weather (Young Scientist Concepts and Projects)*
Kerrod, R., 1998. Gareth Stevens, ISBN 0-83682088-6. \$21.27.
- What Is Weather*
Owen, A., A. Owen, and M. Ashwell, 1999. Rigby Interactive Library. \$19.22 each.
-*Rain*, ISBN 1-575727897.
-*Snow*, ISBN 1-575727900.
-*Sunshine*, ISBN 1-575727919.
-*Watching the Weather*, ISBN 1-575727927.
-*Wind*, ISBN 1-575727935.
- What's the Weather*
Roffey, M., 1995. McClelland and Stewart, ISBN 0-33359234-4. \$9.99.

- Why Can't I See the Wind?: First Questions and Answers About Weather*
1994, Time Life Education, ISBN 0-783508911-3. Part of *Time-Life Library of First Questions and Answers* series. \$14.95.
- Why Does Lightning Strike? Questions Children Ask About the Weather*
Martin, T., and C. Bingham, 1996. Dk Publishing, ISBN 0-78941123-7. Part of *Why Books* series. \$9.95.
- Why Do We Have Wind and Rain?*
-Lewellyn, C., and A. Lewis, 1995. Barrons Juveniles. Hard cover: ISBN 0-81206508-5, \$9.95. Paperback: ISBN 0-81209279-1, \$4.95.
-Lewellyn, C., 1995. Demco Media, ISBN 0-60608907-1. \$10.60.
- Wild About Weather*
Braus, J., editor, 1988. *Ranger Rick's Naturescope Guides*, Chelsea House Pub. ISBN 0-791043381. \$19.95.
- Wild Weather (Hello Reader)*
-Blizzards, Hopping, L.J., and J. Wheeler, 1999. Cartwheel Books, ISBN 0-59039730-3. \$3.99.
-Hurricane
-Hopping, L.J., 1995. Demco Media, ISBN 0-60608384-7. \$9.05.
-Hopping, L.J., and J. Wheeler, 1995. Cartwheel Books, ISBN 0-59046378-0. \$3.50.
-Lightning, Hopping, L.J., and J. Wheeler, 1999. Scholastic Paperbacks, ISBN 0-59052285X. \$20.01.
- Tornadoes, Hopping, L.J., and J. Wheeler, 1994. Scholastic Paperbacks Trade. Hard cover: ISBN 0-60606881-3, \$9.60. Paperback: ISBN 0-59046338-1, \$3.99.
- Wild, Wet and Windy*
Llewellyn, C., 1998. Candlewick Press, ISBN 0-763606308. \$4.99.
- Wind Blows (What Happens When)*
Butler, D., 1995. Raintree/Steck Vaughn, ISBN 0-81724153-1. \$21.40.
- Wind and Weather: Climates, Clouds, Snow, Tornadoes, and How Weather Is Predicted*
Onish, L., 1995. Scholastic Paperbacks Trade, ISBN 0-59047646-7. Part of *Scholastic Voyages of Discovery, Natural History* series. \$19.95.
- Wind, What Makes You Move?*
Grazzini, F., C. Carrer, and T. Wise, 1996. Kane/Miller Book Publishing Company, ISBN 0-91629167-7, \$11.95.
- The Wonder of Weather*
Freier, G.D., 1999. Gremmercy, ISBN 0-517201941. \$7.99.
- Y**
Yeah, But Do I Need an Umbrella?: Weather Made Simple
Atkins, B., 1994. Renaissance Publications, ISBN 0-93664518-0. \$8.95.
- You Are the Weather*
Horn, R., 1997. Distributed Art Publishing, ISBN 3-93114145-4. \$45.00.

5.3. REFERENCE BOOKS

This list contains books which may be found in reference collections of libraries.

- *Aviation Weather*
Lester, P.F., 1995. Jeppesen Sanderson, 402 pp., ISBN 0-88487-178-9. \$45.95.
- *Aviation Weather and Weather Services*
Gleim, I.N., 1998. Gleim Publications, ISBN 0-917539931. \$18.95.
- *Calculating the Weather: Meteorology in the 20th Century*
Nebeker, F., 1995. Academic Press, International Geophysics series, Volume 60, ISBN 0-12515175-6. \$59.95.
- *Encyclopedia of Climate and Weather, Volumes 1 & 2*
Schneider, S.H., 1996. Oxford University Press, 928 pp., ISBN 0-19-509485-9. \$195.00.
- *Gale Research, Inc. Datasets*
-Storm Data for the U.S., 1970-1974, 1975-1979.
-Climate Normals for the U.S., Base 1951-1980, 1st edition, 711 pp., ISBN 0-8103-1025-2.
-Climates of the States, 1985, 2 volumes, 1572 pp., ISBN 0-8103-1042-2.
-The Weather Almanac, 1997, 8th edition, 855 pp., ISBN 0-81035522-1. \$135.00.
- Weather of the U.S. Cities, Ruffner, and F.E. Bair, 1985, 2 volumes.
- *Glossary of Meteorology*
Huschke, R.E., editor, 1959. American Meteorological Society, Boston, 658 pp.
- *Glossary of Weather and Climate*
Geer, I., 1996. American Meteorological Society. Hard cover: ISBN 1-87822019-5, \$29.95. Paperback: ISBN 1-87822021-7, \$21.95.
- *Handbook of Applied Meteorology*
Houghton, D.D., editor, 1985. John Wiley and Sons, New York, 1461 pp., ISBN 0-471-08404-2. Available from American Meteorological Society, Boston.
- *McGraw-Hill Encyclopedia of Ocean and Atmospheric Sciences*
Parker, S.P., editor, 1980. McGraw-Hill Book Co., New York, 580 pp., ISBN 0-07-045500-7.
- *Meteorological and Geostrophysical Abstracts*
Current abstracts are indexed from domestic and foreign sources covering meteorology, climatology, hydrology, glaciology, and environmental sciences. Meteorological and Geostrophysical Abstracts c/o Inforonics, Inc.,

550 Newtown Road/POB 458
Littleton, MA 01460
Phone: (508) 486-8976
Fax: (508) 486-0027

•*Meteorological Glossary*

Lewis, R.P.W., editor, 6th edition, 1991. Her Majesty's Stationary Office, 335 pp. Available through Unipub, Lanham, MD. ISBN 0-11-400363-7.

•*Meteorology Source Book*

Parker, S.P., editor, 1987. McGraw-Hill Book Co., New York, 304 pp., ISBN 0-07-045511-2.

•*Significant Tornadoes, 1880-1989*

Environmental Films, St. Johnsbury, VT, two-volume set, 1245 pp., ISBN 1-879363-00-7.

•*Times Books World Weather Guide*

Pearce, E.A., and G. Smith, 1984. Times Books, New York, 480 pp., ISBN 0-8129-1123-7.

•*Traveler's Weather Guide*

Mogil, H.M., 1990. Narrative and tabular climatic information for 150 cities. Available from How the Weatherworks, 1522 Baylor Avenue, Rockville, MD 20850.

•*Weather Almanac: A Reference Guide to Weather, Climate, and Air Quality in the United States and Its Key Cities*

Wood, R.A., 7th Edition, 1996. Gale Research, ISBN 0-81036980-X. \$130.00.

•*Weather America: The Latest Detailed Climatological Data for Over 4,000 Places--With Rankings*

Garwood, A.N., 1996. Toucan Valley Publications, ISBN 1-88492560-X. \$99.95.

•*Weather of United States Cities*

Wood, R.A., 5th Edition, 1996. Gale Research, ISBN 0-81035525-6. \$210.00.

•*World Weather Extremes*

Riordan, P., 1994. Diane Publishing Company, ISBN 0-78811537-5. \$35.00.

5.4. ACTIVITIES AND LABORATORY EXERCISE MANUALS FOR K-12

This section contains printed material describing demonstrations, experiments, and other student activities. Some of the sources are reference books which are aimed toward the teacher and include prepared lesson plans.

•*The Amateur Meteorologist: Explorations and Investigations*

Mogil, H.M., and B.G. Levine, 1993. Contains hands-on experiments for students in Grades 6-8 to undertake at home. Library edition: ISBN 0-531-11045-1, \$17.95. Paperback: ISBN 0-531-159696-6, \$6.95.

How the Weatherworks, 1522 Baylor Avenue, Rockville, MD 20850.

Phone: (301) 762-7669

•*American Meteorological Society*

A series of activities in teacher guides have been prepared by Project Atmosphere of the AMS.

45 Beacon Street, Boston, MA 02108-3693

Phone: (617) 227-2425

Web: www.ametsoc.org

•*Articles with student activities:*

Adridge, M., B. Lary, and G.H. Krockover, 1989: Introducing isolines. *The Science Teacher*, **56**, 31-33. Presents an activity with three cork boards which describes isopleth analysis procedures.

Gonski, R., 1992: School weather network - A cooperative effort. *Bulletin of the American Meteorological Society*, **73**, 628-630. Discussion of the development, maintenance, and use of a statewide school weather network. Students involved in the project were in 7th Grade.

Knorr, T.P., 1984: Weather or not to teach junior high meteorology. *The Science Teacher*, **51**, 62-64. Presents a weather map activity with white sheet

metal boards for a weekly weather map sequence; weather information is from The Weather Channel.

Mogil, H.M., and H.T. Collins, 1989: Hurricanes. *Science and Children*, **27**, 41-44.

Mogil, H.M., and H.T. Collins, 1989: Seasons. *Science and Children*, **27**, 37-40.

Mogil, H.M., and H.T. Collins, 1989: Mountain meteorology. *Science and Children*, **27**, 29-33.

Mogil, H.M., and H.T. Collins, 1989: Oceans. *Science and Children*, **27**, 17-24.

•*Atmospheric Detectives. Atlas 2 Teacher's Guide with Activities*

NASA, 1992. NASA-EP-285/11-92, Washington, DC, 28 pp.

•*Calendar Activity*

Winrich, R.A., 1990. Aerospace Education Services Project, NASA Lewis Research Center, Cleveland, OH, 22 pp.

•*Earth: A Creative, Hands-on Approach to Science*

Baker, W., and A. Haslam, 1993. Aladdin Books, New York, 48 pp., ISBN 0-689-71662-1.

•*Earth's Mysterious Atmosphere: Atlas 1 Teacher's Guide with Activities*

NASA, 1991. NASA-EP-282/11-91, Washington, DC, 77 pp.

•*Earth Science Activities for Grades 2-8*

Tolman, M.N., and J.O. Morten, 1986. Science Curriculum Activities Library, Parker Publishing Co., Inc., West Nyack, NY, 261 pp., ISBN 0-12-222522-0.

•*Earth Science for Every Kid: 101 Easy Experiments That Really Work*

- Van Cleave, J.P., 1991. John Wiley and Sons, New York, 231 pp., ISBN 0471-54389-6.
- Experimenting with Air and Water*
Ward, A.M., 1993. Part of *Experimenting With* series. Batsford, North Pomfret, VT, 48 pp., ISBN 0-8521-9774-8. An activity book for 8-13 year olds.
 - Great Explorations in Math and Science (GEMS)*.
Curricula for global climate change and acid rain are sold by the GEMS program at:

Lawrence Hall of Science, University of California, Berkeley, CA 94720
Phone: (510) 642-7771
 - A Look at Weather: Activities for the Primary Student*
Winrich, R.A., 1988. Aerospace Education Services Project, NASA Lewis Research Center, Cleveland, OH, 31 pp. Illustrations, maps, and forms.
 - Making and Using Your Own Weather Station*
Tannenbaum, B., and H.F. Tannenbaum, 1989. Franklin Watts, New York, 111 pp., ISBN 0-531-10675-6.
 - 175 More Science Experiments to Amuse and Amaze Your Friends*
Cash, T., S. Parker, and B. Taylor, 1990. Random House, New York, 172 pp. ISBN 0-679-80390-4.
 - Project Earth Science: Meteorology*
Smith, P.S., and B. A. Ford, 1994, 233 pp., ISBN 0-87355-123-0. A resource guide which contains readings and activity materials for middle school (Grades 5-10) earth science teachers. One of four guides being prepared in NSTA Project Earth Science series.

National Science Teachers Association, 1742 Connecticut Avenue, N.W., Washington, DC 20009.
 - Puddle Jumpers: Fun Weather Projects for Kids*
Gillis, J.S., and P. Delmonte, 1996. Storey Communications, ISBN 0-8826938-9. \$9.95.
 - The Science Book of Weather*
Ardley, N., 1992. Gulliver Books, San Diego, 29 pp., ISBN 0-15-200624-9.
 - 175 Science Experiments to Amuse and Amaze Your Friends*
Walpole, B., 1988. Random House, New York, 172 pp., ISBN 0-394-89991-1.
 - Science Experiments Index for Young People*
Pillger, M.A., 1988. Libraries Unlimited, Inc., Englewood, CO, 239 pp., ISBN 0-87287-671-3. 239 pp.
 - Science Projects About Weather*
'Ready-To-Go Activities, Games, Literature Selections, Poetry, and Everything You Need for A Complete Theme Unit,' 1997. SRA, ISBN 0-02686670-6. \$89.00.
 - Simple Weather Experiments with Everyday Materials*
Mandell, M., 1991. Sterling, 128 pp., ISBN 0-8069-7296-3.
 - Student Activities in Meteorology (SAM)*
Gardner, R., and D. Webster, 1994. Enslow Publications, ISBN 0-89490533-3. \$18.95.
 - Teacher's Weather Sourcebook: Information, Ideas and Activities*
Konvicka, T., 1994. Teacher Ideas Press, ISBN 1-563084880. \$25.00.
 - Two Suns and a Green Sky: 22 Out-of-This-World Weather Models and Experiments*
Baker, T.R., 1994. McGraw-Hill, ISBN 0-07005143-7. \$12.95.
 - The Weather Classroom. A Complete Workbook for Understanding Meteorology, Climatology, and the Environment*
Moore, K.W., 1992. The Weather Channel, 300 Interstate North Parkway, Atlanta, GA 30339, 76 pp., ISBN 1-882227-00-X.
 - Weather Forecasting: A Young Meteorologist's Guide*
Ramsey, D., 1990. Tab Books, 146 pp.
 - Weather In the Lab*
Baker, T.R., 1993. TAB Books, Blue Ridge Summit, PA, 145 pp., ISBN 0-8306-4307-9.
 - The Weather Report*
Graf, M., 1989. Fearon Teacher Aids, Belmont, CA, 160 pp., ISBN 0-8224-7511-1.
 - Weather (Science Projects)*
Olade, C., and C. Fairclough, 1998. Raintree/Steck Vaughn, ISBN 0-817249494. \$24.26.
 - Weather Station: Activity Fun Pack*
1998. Dk Pub. Merchandise, ISBN 0-789430061. \$5.95.
 - Weather Study Under a Newspaper Umbrella*
Mogil, H.M., 1989. Curriculum suggestions involving the newspaper and television in geography and weather studies. Additional information about supplementary classroom activities and training workshops.
How the Weatherworks, 1522 Baylor Avenue, Rockville, MD 20850.
Phone: (301) 762-7669
 - Weather Watch*
Wyatt, V., 1990. Addison-Wesley Publishing Co., Inc., Reading, MA 95 pp., ISBN 0-201-15404-8.

5.5. TEXTBOOKS

- *Applications of Weather Radar Systems: A Guide to Uses of Radar Data in Meteorology and Hydrology*
C.G. Collier, 1996. John Wiley and Sons, Part of Wiley-Prazis Series in Atmospheric Physics, ISBN 0-47196013-6. \$125.00.
- *The Atmosphere: An Introduction to Meteorology*
Lutgens, F.K., E.J. Tarbuck, and D. Tasa, 1997. Prentice Hall, 7th Edition, ISBN 0-13742974-6. \$60.67.
- *Atmosphere, Weather, and Climate*
Barry, R.G., and R.J. Chorley, 1998: Routledge. Hard cover: ISBN 0-41516019-7, \$55.01. Paperback: ISBN 0-41516020-0, \$22.01.
- *Economic Value of Weather and Climate Forecasts*
Katz, R.W., and A.H. Murphy, 1997. Cambridge University Press, ISBN 0-52143420-3. \$49.95.
- *Essentials of Weather*
Moran, J.M., and M.D. Morgan, 1994. Prentice Hall, ISBN 0-02383831-0. \$50.00.
- *Images in Weather Forecasting: A Practical Guide for Interpreting Satellite and Radar Imagery*
Bader, M.J., G.S. Forbes, J.R. Grant, R. Lilley, and A.J. Waters, 1997. Cambridge University Press, 523 pp., ISBN 0-52162915-2. \$59.95.
- *An Introduction to Numerical Weather Prediction Techniques*
Krishnamurti, T.N., and L. Bounoua. Lewis Publishing, ISBN 0-84938910-0. \$95.00.
- *Meteorology: The Atmosphere and the Science of Weather*
Moran, J.M., M.D. Morgan, and P.M. Pauley, 1996. Prentice Hall. Book: ISBN 0-13266701-0, \$60.52. Study Guide: ISBN 0-02383345-9. \$23.74.
- *Meteorology Today*
- *Meteorology Today: An Introduction to Weather, Climate, and the Environment*
Ahrens, C.D., 1994. West Information Publishing Group, ISBN 0-31402779-3. \$66.95.
- *Meteorology Today for Scientists and Engineers: A Technical Companion Book*
Stull, R.B., 1995. West Publishing Company, 355 pp., ISBN 0-314-06471-0.
- *Mid-Latitude Weather Systems*
Carlson, T., 1994. Unwin Hyman, ISBN 0-4510930-2. \$45.00.
- *A World of Weather: Fundamentals of Meteorology. Second Edition*
Nese, J.M., and L.M. Greci, editors, 1998. Kendall/Hunt Publishing, 539 pp., ISBN 0-7872-357784. \$52.95.

5.6. GOVERNMENT PUBLICATIONS

Current National Weather Service public service posters, pamphlets, and other materials on natural disaster preparedness are available in several forms. Updated lists are available on the web or from:

Customer Service Core
National Weather Service Headquarters, NOAA
1325 East-West Highway, Room 14360
Silver Spring, MD 20910
Phone: (301) 713-0090
Web: www.nws.noaa.gov/om/nwspub.htm

Publication	Number	Web
<u>Aviation</u>		
A pilot's guide to aviation weather services	93056	www.nws.noaa.gov/om/pilot.htm
Aviation modernization	94051	
ASOS guide for pilots (Booklet)	96076	www.nws.noaa.gov/om/asosbook.htm
Key to aerodrome forecast (TAF) & aviation routine weather report (METAR) (Card)	96052	www.nws.noaa.gov/om/oso/oso1/oso12/document/guide.shtml
<u>Dust storms</u>		
Dust storm driving safety (Wallet card)	82002	www.nws.noaa.gov/om/duststrm.htm
<u>Flash floods and floods</u>		
Red Cross Poster—Are You Ready for a Flood or a Flash Flood? (English/Spanish)	*92062	
Flash flood (Wallet card)	77014	www.nws.noaa.gov/om/flashfld.htm
Flash floods and floods . . . The awesome power!	92050	www.nws.noaa.gov/om/ffbro.htm
The hidden danger—Low water crossing	96074	www.nws.noaa.gov/om/oh/tt/xwater/index.shtml
Red Cross—Are you ready for a flood or flash flood? -English	*92059	
Red Cross—Are you ready for a flood or flash flood? - Spanish	92060	

River and flood program (Hydrologic services program)	94059
<u>Hazards and preparedness</u>	
FEMA's emergency preparedness materials catalog	92054
SKYWARN decal	92051
<u>Heat waves</u>	
Heat wave	85001 www.coastalnet.com/weather/nwsmhx/heatwv.htm
Red Cross—Are you ready for a heat wave? - English	*94052
Red Cross—Are you ready for a heat wave? - Spanish	*94056
<u>Hurricanes</u>	
Atlantic hurricane names	— www.nws.noaa.gov/om/atlhurr.htm
Atlantic hurricane tracking map—8 1/2" by 11"	96071
Atlantic hurricane tracking map—17" by 22"	96072
Hawaiian hurricane safety measures with Central Pacific tracking chart	85002
Hurricane! A familiarization booklet	*91001 www.nws.noaa.gov/om/hurfam.pdf
Pacific hurricane names	— www.nws.noaa.gov/om/pachurr.htm
Hurricanes . . . Unleashing nature's fury	94050 www.nws.noaa.gov/om/hurrbro.htm
Pacific hurricane tracking map—12" by 24"	96073
Red Cross—Are you ready for a hurricane? -English	94053
Red Cross—Are you ready for a hurricane? - Spanish	94054
Red Cross Poster—Are you ready for a hurricane? (English/Spanish)	94055
Survival in a hurricane (Wallet card) - English	70027 www.nws.noaa.gov/om/hurricne.htm
Survival in a hurricane (Wallet card) - Spanish	85006 www.nws.noaa.gov/om/hurrspan.htm
<u>Marine</u>	
Mariner's guide to marine weather services (Booklet)	92056 www.nws.noaa.gov/om/marine2.htm
Safe boating weather tips	94058 www.nws.noaa.gov/om/safeboat.htm
Tsunami: The Great Wave	— www.nws.noaa.gov/om/tsunami.htm
<u>Natural hazards</u>	
FEMA's Emergency Preparedness Materials Catalog	92054
Natural hazard watch & warning poster - English	86001 www.nws.noaa.gov/om/nh-mastr.htm
Natural hazard watch & warning poster - Spanish	86001 www.nws.noaa.gov/om/massp.htm
<u>NOAA</u>	
A change in the National Weather Service	93059
National Centers for Environmental Prediction	96051
NOAA Brochure	92501
NOAA Weather Radio brochure	96070 www.nws.noaa.gov/om/nwrbro.htm
NOAA Weather Radio decal	96053
NOAA Weather Radio frequency pamphlet	94061
<u>Severe thunderstorms</u>	
Advanced spotter's field guide	92055 www.nws.noaa.gov/om/advspg.pdf
Basic spotters' field guide	97050 www.nws.noaa.gov/om/basicspot.pdf
Owlie Skywarn - Watch out storms ahead	82004 www.coastalnet.com/weather/nwsmhx/owlie.htm
Red Cross Poster—Are you ready for a thunderstorm? *93051	
Red Cross—Are you ready for a thunderstorm? (Spanish)	93052
Red Cross Poster—Are you ready for a thunderstorm? (English/Spanish)	*93053
Spotter's guide for identifying and reporting severe local storms	#81011 www.nws.noaa.gov/om/spotguid.htm
Spotter ID card	93060
Thunderstorms and lightning . . . The underrated killers	92053 www.nws.noaa.gov/om/trwbro.htm
<u>Tornadoes</u>	
Red Cross—Are you ready for a tornado?	*92057
Red Cross—Are you ready for a tornado? (Spanish)	92058
Red Cross Poster—Are you ready for a tornado? (English/Spanish)	*92061
Tornadoes . . . Nature's most violent storms	92052 www.nws.noaa.gov/om/tornado.htm

Tornado safety tips (Como protegerse en caso de tornado (Wallet card)

85005

Winter storms

Red Cross—Are you ready for a winter storm? 91003

Red Cross—Are you ready for a winter storm? (Spanish) 91004

Red Cross Poster—Are you ready for a winter storm? (English/Spanish)

91005

Winter storms . . . The deceptive killers 91002 www.nws.noaa.gov/om/wintrstm.htm

* Available only from your local Red Cross chapter

Text only available at www.nws.noaa.gov/om.nwspub.htm

•National Weather Service, NOAA

Owlie Skywarn series of severe weather booklets.

Reports to the Nation, Our changing planet: El niño and climate prediction. Spring 1994, UCAR and NOAA, 24 pp.

Reports to the Nation: Our changing planet. Fall 1997, UCAR and NOAA, 24 pp.

For these and other reports, a free NOAA school information service letter can be obtained from:

NOAA Public Affairs Office, Room 6013, HCHB, U.S. Dept. of Commerce, Washington, DC 20230

•Ozone

A free booklet on atmospheric ozone is available from:

NOAA Office of Global Programs, 1100 Wayne Avenue, Room 1225, Silver Spring, MD 20910

•Superintendent of Documents

A listing of low-cost government publications applicable to weather is available free of charge by writing to:

Weather, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

5.7. WEATHER-RELATED PERIODICALS

•American Weather Observer

Monthly publication in newspaper format including feature articles and data contributed by members all over the country, and other related weather information. ISSN 8755-9552.

The Belvidere Daily Republican Co., 410 Whitney Blvd., Belvidere, IL 61008-3772. \$24.95 per year.

Phone: (815) 544-3772

Email: awowx@aol.com

•Bulletin of the American Meteorological Society

Official bulletin of the AMS. Contains announcements of meetings, book reviews, articles, conference schedules, and position statements on educational affairs. ISSN 0003-0007.

American Meteorological Society, 45 Beacon Street, Boston, MA 02108-3693.

Phone: (617) 227-2425

Web: www.ametsoc.org

•Stormtrack

Bimonthly black-and-white magazine about storm chasing, primarily of tornadic storms on the U.S. plains states. Tim Marshall, 4041 Bordeaux Circle, Flower Mound, TX 75028-7050. \$15.00 per year.

Web: www.telepath.com/www/storm/

•Weather

A non-technical weather-oriented magazine with color photos, published monthly by the Royal Meteorological Society, 104 Oxford Road, Reading, Berkshire RG1 7LL, England. ISSN 0043-1656. £30 per year.

Email: execsec@royal-met-soc.org.uk

•Weather Bulletin

A non-technical black-and-white quarterly magazine emphasizing severe weather in Texas and nearby states.

Texas Severe Storms Association, P.O. Box 122222, Arlington, TX 76012. \$14.00 per year.

Web: www.tessa.org

•Weatherwise

Bimonthly color non-technical magazine about the weather, directed toward the layperson, and ideal for teachers and students. In addition to informative articles, it has features such as simple experiments, reviews of audiovisuals, and an annual summary of weather events across the U.S. and Canada.

Heldref Publications, 1319 18th Street N.W., Washington, DC 20036-1802. ISSN 0043-1672. \$29.00 per year.

Web: www.heldref.org/ww/ww/html

5.8. OTHER SCIENCE PERIODICALS

- American Red Cross*

General Supply Division, 7401 Lockport Place, Lorton, VA 22079

- Current Science*

Weekly Reader Corp., 200 First Stamford Place, P.O. Box 120023, Stamford, CT 06912-0023

Phone: (800) 446-3355

Web: weeklyreader.com/features/cs/html

- Earth*

Published bimonthly. ISSN 1056-148X.

Kalmbach Publishing Company, 21027 Crossroads Circle, Waukesha, WI 53187.

Phone: (414) 796-8776

- GLOBE offLINE*

Quarterly journal of GLOBE program.

Web: www.globe.gov

- Natural Hazards Observer*

Institute of Behavioral Science #6, University of Colorado, Campus Box 482, Boulder, CO 80308

Web: www.Colorado.EDU/hazards/

- Science*

Published weekly by the AAAS. ISSN 0036-8075.

American Association for the Advancement of Science, 1333 H Street, N.W., Washington, DC 20005-4792.

Phone: (202) 326-6670

Web: www.aaas.org

- Science News*

Published weekly. ISSN 0036-8423.

1719 N Street N.W., Washington, DC 20036.

Phone: (202) 785-2255

- Scientific American*

Published monthly. In addition to occasional weather-related articles, features such as 'The Amateur Scientist' may be of interest.

415 Madison Avenue, New York, NY 10017.

Phone: (800) 333-1199

Past issues on meteorology can be obtained from:

W.H. Freeman and Company, 660 Market Street, San Francisco, CA 94104

5.9. INSTRUCTIONAL PERIODICALS

Several publications from educational organizations occasionally contain weather- information directed toward the classroom teacher. They include articles, lab or demonstration hints, and book and software reviews.

- Earth Notes*

Published quarterly for educators for Grades K-6. Provides a forum for the exchange of ideas in elementary-level environmental education.

Environmental Protection Agency, Public Information Center, 401 M Street, S.W., Washington, DC 20460.

Phone: (202) 290-7751

- The Earth Scientist*

The National Earth Science Teachers Association (NESTA) publishes *The Earth Scientist* 4 times a year. Each issue specializes in geology, astronomy, meteorology, or oceanography. Recent weather articles of 4 to 8 pages in length were on the topics of lightning, lightning safety, heat waves, microbursts, weather forecast terms, mesoscale convective systems, supercell thunderstorms, and multiple-vortex tornadoes.

Jan Woerner, Editor, 35201 Hollow Creek Drive, Yucaipa, CA 92399-5905

- National Science Teachers Association (NSTA)*

The national professional organization of science teachers publishes a series of periodicals for teachers.

1742 Connecticut Ave., NW, Washington, DC 20009

Phone: (202) 328-5800

Fax: (202) 328-0974

- Science and Children*

8 issues a year for elementary and middle-school teachers.

- Science Scope*

6 issues a year for middle and high school science teachers.

- The Science Teacher*

9 issues a year for junior and senior high school science teachers.

- The Journal of College Science Teaching*

6 issues a year for undergraduate college science teachers.

- The Physics Teacher*

Published monthly from September to May for middle-school and secondary-school science teachers.

American Association of Physics Teachers (AAPT), 5112 Berwyn Road, College Park, MD 20740-4100.

- Science Activities*

Published quarterly for K-12 teachers, on biological, physical, and behavioral sciences. Includes descriptions of experiments and projects, features on products, computers, and book reviews..

Heldref Publications, 1319 18th Street N.W., Washington, DC 20036-1802.

Phone: (800) 365-9753

Web: www.heldref.org

5.10. WEATHER ALMANACS AND CALENDARS

Almanacs and calendars containing weather and climate information can be informative and stimulate interest in weather. Some calendars are distributed nationally and usually provide listings of significant weather events that have occurred in various areas of the country. National weather statistics and topics are given in capsulated form. Calendars distributed locally may have more daily information pertinent to the region, such as daily records or extreme temperatures, precipitation, and sunrise and sunset times. A complete listing of these local weather calendars is not provided.

•**Accord Calendars (1999)**

<i>Weather Guide</i> wall calendar	\$8.95
<i>Weather Whys and Wonders</i> desk calendar	\$7.95

Accord Publishing Ltd., 1407 Larimer Square, Suite 206,
Denver, CO 80202-1723.
Phone: (303) 595-3839

•**Bob Ryan's Weatherwise Guide and Almanac**

WRC-TV 4, 4001 Nebraska Avenue, N.W., Washington,
DC 20016.

•**Environment Canada**

Fifth House Publishers.
Phone: (800) 360-8826.

•**Minnesota Weatherguide/Environment Calendar**

Freshwater Foundation at Spring Hill Center, 725 County
Road 6, Wayzata, MN 55391.

•**Royal Meteorological Society Calendar**

104 Oxford Road, Reading, Berkshire RG1 7LL, England.
Email: execsec@royal-met-soc.org.uk

•**Vermont Life Weather Calendar**

Alan C. Hood and Company, 0-93690647-7. \$9.95.

•**Washington DC Weather Calendar**

D.C. Chapter of the American Meteorological Society, P.O.
Box 13567, Silver Spring, MD 20911-3557.

•**1999 Weather Calendar**

St. Martins Press, ISBN 0-789302071. \$11.95.

•**The Weather Channel**

The Weather Channel, 300 Interstate North Parkway,
Atlanta, GA 30339.
Web: www.weather.com

6. INSTRUMENTS AND OTHER EQUIPMENT

Since meteorology is an observational science, instruments play an important role in gathering information about the atmosphere. Weather stations can be built and outfitted with weather instruments, but they typically are expensive, so price comparisons should be made prior to purchase. Catalogues and price lists may be obtained from reputable scientific supply houses. Selected updated address lists of suppliers of scientific and instructional equipment can be found in the annual issue of the *Science Education Suppliers Supplement* and other publications from the National Science Teachers Association (NSTA):

1742 Connecticut Avenue, N.W., Washington, DC 20009-1171.

Phone: (202) 328-5800

Before purchasing weather instruments, the following references should be read:

Snow, J.T., and S.B. Harley, 1987: Basic meteorological observations for schools: Temperature. *Bulletin of the American Meteorological Society*, **68**, 486-496.

Snow, J.T., and S.B. Harley, 1988: Basic meteorological observations for schools: Rainfall. *Bulletin of the American Meteorological Society*, **69**, 497-507.

Snow, J.T., M.E. Akridge, and S.B. Harley, 1989: Basic meteorological observations for schools: Surface winds. *Bulletin of the American Meteorological Society*, **70**, 493-508.

Snow, J.T., M.E. Akridge, and S.B. Harley, 1992: Basic meteorological observations for schools: Atmospheric pressure. *Bulletin of the American Meteorological Society*, **73**, 781-794.

Virgo, S.E., 1976: Some simply made and inexpensive meteorological instruments. *Weather*, **31**, 404-411.

6.1. WEATHER KITS

To aid teachers with limited experience in weather instrumentation, several supply companies package sets of instruments and other instruction materials which can be used as a self-contained kit for weather study. Some teachers create their own weather kits from an assortment of materials, or augment the kits with additional instruments.

Suggested components for a weather kit are a thermometer, maximum/minimum thermometer, soil thermometer, anemometer, rain gauge, sling psychrometer, radio-meter, sundial, barometer, barographs, and thermograph. Other desirable features include an atmosphere chart, a good book, weather log, and five-day weather watch.

•Beginner's Pack

Barometer, maximum/minimum thermometer, radio-meter, rain gauge, wind meter, cloud chart, weather guide, and weather log. \$88.00 plus \$5.50 shipping.

•BoxTopics: Storms and Weather Forecasting

Pullouts, flip cards, stickers, and activity book. \$34.95.

1997, Briarpatch, P.O. Box 604, Short Hills, NJ 07079.

•Children's Pack

Five-day weather watcher, radiometer, sundial, cloud chart, tornado tube, weather information cloud chart, and weather activity book. \$25.00 plus \$5.00 shipping.

Wind and Weather, The Albion Street Water Tower, P.O. Box 2320, Mendocino, CA 95460.

Phone: (800) 922-9463

•Storm Watch

Book and air balance forecasting station. \$14.95.

•Water Watch Kit

Book, rain gauge, and acid rain test kit. \$14.95.

•Weather Guide Photo Anthology I & II

Postcard collection of photos from Weather Guide Calendars. \$6.95 for both volumes.

Accord Publishing Ltd., 1407 Larimer Square, Suite 206, Denver, CO 80202-1723

Phone: (303) 595-3839

•Weather Watcher Kit

Maximum/minimum thermometer, 2-inch rain gauge, and handbooks. \$16.90.

Fisher Scientific

Phone: (800) 621-4769

6.2. WEATHER INSTRUMENT & SCIENCE EQUIPMENT SUPPLIERS

Several companies only supply weather instruments for professional purposes or the serious amateur. Usually, instruments obtained from these supply houses are of high quality and may be expensive. Other companies have instruments for a range of disciplines and educational institutions. They stock some instruments for the home and

school. These instruments usually suffice for beginners and the more casual weather observer. In addition, some suppliers have instructional materials, as in other sections of this publication. Companies usually will furnish catalogs on request. Some models and teaching aids are also offered.

American Weather Enterprises
P.O. Box 1383
Media, PA 19063

Beckley-Cardy
917 Hickory Lane
Mansfield, OH 44901-8105

Carolina Biological Supply Co.
2700 York Road
Burlington, NC 27215-5551

Central Scientific (CENCO)
11222 Melrose Avenue
Franklin Park, IL 60131
Phone: (800) 262-3626
Fax: (708) 451-0231

Clearvue
6465 North Avondale Avenue
Chicago, IL 60631-1996
Phone: (800) 253-2788
Fax: (800) 444-9855
Web: www.clearvue.com

Cloud Chart, Inc.
P.O. Box 21298
Charleston, SC 29413
Phone: (803) 577-5268

Davis Instruments
3465 Diablo Avenue
Hayward, CA 94545-2778
Phone: (800) 678-3669
Fax: (510) 670-0589
Email: info@davisnet.com

Delta Education
P.O. Box 3000
Nashua, NH 03061-3000
Phone: (800) 442-5444
Fax: (800) 282-9560
Web: www.delta-ed.com

Edmund Scientific
101 East Gloucester Pike
Barrington, NJ 0800
Product information:
(609) 573-6879
Orders: Phone: (609) 547-8800
Fax: (609) 573-6295

ETA
620 Lakeview Parkway
Vernon Hills, IL 60061-1838
Phone: (800) 445-5985
Fax: (800) ETA--9326
Web: www.etauniverse.com

Fisher Scientific Co.
4901 West LeMoyne Street
Chicago, IL 60651
Phone: (800) 621-4769

Forestry Suppliers, Inc.
P.O. Box 8397
205 West Rankin Street
Jackson, MS 39284-8397
Phone: (800) 647-5368
Fax: (800) 543-4203
Web: www.forestry-suppliers.com

Frey Scientific Co.
905 Hickory Lane
Mansfield Lane
Mansfield, OH 44905
Phone: (800) 225-FREY

H & R Corporation
401 East Erie Avenue
Philadelphia, PA 19134

Hubbard Scientific
P.O. Box 104
Northbrook, IL 60065
Phone: (800) 221-9884
(312) 272-7810

Nasco Science
901 Janesville Avenue
Fort Atkinson, WI 53538-0901
Phone: (800) 558-9595
Fax: (414) 563-8296

Nasco West
1524 Princeton Avenue
Modesto, CA 95352-3837
Phone: (209) 529-6957
Fax: (209) 529-2239

Northeast Discount Weather Catalog
Viking Instruments, Inc.
524 Main Street
South Weymouth, MA 02190
Phone: (781) 331-3795
Fax: (781) 331-9040
Orders: (800) 325-0360

NovaLynx Corp. (Division of Qualimetrics, Inc.)
WeatherMeasure and Weathertronics
P.O. Box 240
Grass Valley, CA 95945-0240
Phone: (916) 477-5226
Fax: (916) 477-8339

PGC Scientifics
9161 Industrial Court
Gaithersburg, MD 20877
Phone: (800) 424-3300
(301) 840-1111
Fax: (301) 9990-0740

Radio Shack
One Tandy Center
Fort Worth, TX 76102

Robert E. White Instruments, Inc.
34 Commercial Wharf
Boston, MA 02110
Phone: (800) 992-3045

Schoolmasters Science
745 State Circle Box 1941
Ann Arbor, MI 48106
Phone: (800) 521-2832
Fax: (800) 654-4321
Email: schscience@aol.com
Web: www.schoolmasters.com

Science Associates
31 Airpark Road
Box 320
Princeton, NJ 08542

Science Kit and Boreal Laboratories
777 East Park Drive
Tonawanda, NY 14150
Phone: (800) 828-7777

Simerl Instruments
238 West Street
Annapolis, MD 21401
Phone: (301) 849-8667

Teacher's Video Company
P.O. Box SCE-4455
Scottsdale, AZ 85261
Phone: (800) 262-8837
Fax: (602) 860-8560
Web: www.teachtsp.com

Tom Snyder Productions
80 Coolidge Hill Road
Watertown, MA 02172-2817
Phone: (800) 342-0236
Fax: (617) 926-6222
Web: www.teachtsp.com

Storm Tech
P.O. Box 474
Hales Corners, WI 53130

Taylor Scientific Instrument
95 Glenn Bridge Road
Arden, NC 28704

Viking Instruments
The Northeast Discount Weather Catalog
532 Pond Street
South Weymouth, MA 02190
Phone: (800) 325-0360

VWR Scientific Products
P.O. Box 5229
Buffalo Grove, IL 60089
Phone: (800) 727-4368
Fax: (800) 676-2540
Email: sarwel@sargentwelch.com
Web: www.sargentwelch.com

Ward's Natural Science Establishments, Inc.
5199 West Henrietta Road
P.O. Box 92912
Rochester, NY 14692-9012
Phone: (716) 359-2502
(800) 962-2660

Weatherwise Affects
440 Middlesex Road
Tyngsboro, MA 01879
Phone: (978) 649-8387
Email: wxaffects@aol.com
Web: www.weatheraffects.com

Weatherwise Books and Instruments
Main Street
New London, NH 03527

Wind and Weather
P.O. Box 2320
Mendocino, CA 95460
Phone: (707) 937-0323

7. COMPUTER SOFTWARE

7.1. WEATHER AND CLIMATE ON THE WEB

Current weather data can be obtained on the web. Electronic media are rapidly expanding and changing, so keeping track of updates and address changes for favorite weather web sites is suggested. Since the income of many providers comes from the timeliness of the information, time

lags are introduced before data access is opened to the public. These delays may range from 15 minutes to an hour or more until the information is considered too old to be of commercial value. While this list is not exhaustive, most addresses link to related sites.

Climate Prediction Center
Colorado Climate Center
El Niño/La Niña

NOAA
National Climatic Data Center
National Weather Service
UCAR

Environmental News Network
Environmental Protection Agency
National Climatic Data Center, NOAA
Climate Summaries for Cities and States
Major Weather Disasters of 1980-1997

AccuWeather
CNN Weather
Forecast Systems Laboratory, NOAA
NCAR - UNIDATA
NWS - Interactive Weather Information Network
Oklahoma Weather Roundup
Pennsylvania State University
Purdue University
Texas A & M University
University of Michigan
University of Wisconsin
USA Today Weather Page
The Weather Channel
WGN-TV, Chicago
Wind Profilers

Federal Emergency Management Agency (FEMA)
NASA
Marshall Space Flight Center
Tropical Rainfall Measuring Mission (TRMM)
Education
National Center for Atmospheric Research (NCAR)
Atmospheric Technology Division
COMET
MM5 Computer Model
Photo Archive
Univ. Corp. for Atmospheric Research (UCAR)

All Foreign Weather Agencies
Australia

Climate

nic.fb4.noaa.gov
ulysses.atmos.colostate.edu

www.elnino.noaa.gov
ibis.grdl.noaa.gov/SAT/near_rt/enso/topex_97.html
nic.fb4.noaa.gov:80/products/analysis_monitoring/impacts/enso.html
www.dir.ucar.edu/esig/lanina/
www.enn.com/climate/
www.epa.gov/globalwarming/
www.ncdc.noaa.gov/
www.cdc.noaa.gov/USclimate
www.ncdc.noaa.gov/ol/reports/weather-events.html

Current U.S. Weather

www.accuwx.com
www.cnn.com/WEATHER/index.html
www.fsl.noaa.gov/docs/wthr/fsl-weather.html
www.rap.ucar.edu/weather/upper.html
iwin.nws.noaa.gov/iwin/graphicsversion/main.html
wwwcaps.ou.edu/wx/
www.ems.psu.edu/wx/
wxp.eas.purdue.edu
www.met.tamu.edu:80/personnel/students/weather/warning.html
cirrus.sprl.umich.edu/wxnet/
www.ssec.wisc.edu
www.usatoday.com/weather/wfront.htm
www.weather.com
www.wgntv.com
www-dd.fsl.noaa.gov/online.html

Federal Agencies (Except NOAA)

www.fema.gov/fema/trop.htm
www.nasa.gov
www1.msfc.nasa.gov/
yyy.tksc.nasda.go.jp/Home/Press/Press-e/199711/h26f_971128_04_e.html
www.hq.nasa.gov/office/codef/education
www.atd.ucar.edu
comet.ucar.edu
www.mmm.ucar.edu/mm5/mm5forecast/rtmm5.html
www.dir.ucar.edu/iss/dmc/
www.ucar.edu

Foreign Weather

www.ugems.psu.edu/~owens/WWW_Virtual_Library/nwsfo.html
www.bom.gov.au

Brazil (Portuguese)	www.cbn.net.id/commerce/bmg/
Canada	
Canadian Storm Chasers	taiga.geog.niu.edu/chaser/canada
Environment Canada	www.tor.ec.gc.ca/
Montréal (French)	www.osiris.com/meteo/today.htm
Finland	www.geo.fmi.fi
France (French)	www.meteo.fr
Hungary (Hungarian)	www.met.hu
Indonesia	www.cbn.net.id/commerce/bmg/
Spain (Spanish)	www.inm.es
Worldwide 5-day Forecasts	weather.yahoo.com
Zambia	www.zamnet.zm/zamnet/zmd/cwb15.html

Lightning

Alberta, Canada Lightning	www.gov.ab.ca/~env/lfs/fpd/fp/currentmaps/lightng.gif
Children's Lightning Safety	
Sabrina Harwood	www.azstarnet.com/~anubis/zaphome.htm
Kids' Safety Essay	www.strikingimages.com/safety.htm
Global Atmospherics, Inc.	www.glatmos.com
Lightning Strike and Electric Shock Survivors International, Inc.	
National Lightning Safety Institute	www.mindspring.com/~lightningstrike
Optical Transient Detector	www.lightningsafety.com
Sprites and Jets	www.ghcc.msfc.nasa.gov/otd.html
Striking Images	elf.gi.alaska.edu
Univ. of Illinois at Chicago - Medical/Dr. Cooper	www.strikingimages.com
	www.uic.edu:80/~macooper/cindex.htm

Meteorological Education

American Meteorological Society (AMS)	www.ametsoc.org/AMS/amsedu/index.html
COMET	comet.ucar.edu
DataStreame - University of Wisconsin	www.meteor.wisc.edu/~hopkins/ams/
GLOBE	www.globe.gov
How the WeatherWorks	www.weatherworks.com
Jobs for Meteorologists	bluesky.ecas.ou.edu/~sstrum/wxcomps.html
Oakfield, Wisconsin Tornado	cimss.ssec.wisc.edu/oakfield/cs1.htm
University of Illinois	
Weather and Atmosphere Curriculum	athena.wednet.edu/curric/index.html
The Weather World 2010 Project	ww2010.atmos.uiuc.edu
The Weather Channel	www.weather.com/education/index.html
World Meteorological Organization	www.wmo.ch/web/etr/etrp98.html

Meteorological and Science Organizations

American Assoc. for the Advancement of Science	www.aaas.org
American Geophysical Union (AGU)	www.agu.org
American Meteorological Society (AMS)	www.ametsoc.org/AMS/
Local AMS Chapters	www.ametsoc.org/AMS/amschaps/index.html
National Weather Association (NWA)	www.nwas.org
Local NWA Chapters	www.nwas.org/chapters.html
Stormtrack Magazine	www.storm-track.com/
World Meteorological Organization (WMO)	www.wmo.ch

Meteorology at U.S. Universities

All Meteorology Colleges and Universities in World	www.ugems.psu.edu/~owens/WWW_Virtual_Library/metschool.html
Arizona State University	saguaro.la.asu.edu/geography
Colorado State University	w.cira.colostate.edu
Florida State University	www.met.fsu.edu
Georgia Institute of Technology	www.eas.gatech.edu/eas.html
Harvard University	www-as.harvard.edu
Iowa State University	www.public.iastate.edu/~wxintro/atmos.html
Jackson State University	santa.jsu.edu

Lyndon State College	apollo.lsc.vsc.edu
Massachusetts Institute of Technology	www-eaps.mit.edu
Northern Illinois University	taiga.geog.niu.edu/main.html
Ohio State University - Daily Severe Weather Log	asp1.sbs.ohio-state.edu/text/wxascii/sels/WWUS60.KMKC
Oregon State University	www.orst.edu:80/mc/coldep/oceatm/atmsci.htm
Pennsylvania State University	www.met.psu.edu
Purdue University	wxp.eas.purdue.edu
Saint Louis University	www.eas.slu.edu/index.html
State University of New York at Albany	www.atmos.albany.edu
Texas A & M University	www.met.tamu.edu
University of Alabama at Huntsville	vortex.atmos.uah.edu
University of Alaska	www.gi.alaska.edu
University of Arizona	www.atmo.arizona.edu
University of California at Los Angeles	www.atmos.ucla.edu
University of Chicago	geosci.uchicago.edu
University of Georgia	cacimbo.ggy.uga.edu
University of Hawaii	lumahai.soest.hawaii.edu
University of Illinois	atmos.uiuc.edu
University of Maryland	www.metolab3.umd.edu/meteorology.html
University of Miami	www.rsmas.miami.edu/msc/index.html
University of Michigan	aoss.engin.umich.edu
University of Oklahoma	rossby.metr.ou.edu/~som
University of Utah	www.met.utah.edu
University of Washington	www.atmos.washington.edu
University of Wisconsin	www.meteor.wisc.edu
University of Wyoming	www-das.uwyo.edu

Natural Hazards

Disaster Recovery	www.binomial.com
FEMA	www.fema.gov/mit/
Natural Hazards Center - Univ. of Colorado	www.colorado.edu/hazards
Natural Hazards Centre - Australia	www.es.mq.edu.au/NHRC/
Project Safeside	www.weather.com/safeside

NOAA

Environmental Research Laboratories	
Atlantic Oceanographic and Meteorological Lab.	www.aoml.noaa.gov
Environmental Technology Laboratory	www.etl.noaa.gov
Forecast Systems Laboratory	www.fsl.noaa.gov
Great Lakes Environmental Research Lab.	www.glerl.noaa.gov
National Severe Storms Laboratory	www.nssl.noaa.gov
Pacific Marine Environmental Laboratory	www.pmel.noaa.gov
Space Environment Laboratory	www.sel.noaa.gov/today.html
National Environmental Satellite, Data, and Information Service	
National Climatic Data Center	www.ncdc.noaa.gov
National Weather Service	www.nws.noaa.gov
Alaska Region	www.alaska.net/~nwsar
Central Region	www.crh.noaa.gov
Climate Prediction Center	nic.fb4.noaa.gov
Eastern Region	www.rdc.noaa.gov/~ohb/W/WN0000.html
Interactive Weather Information Network	iwin.nws.noaa.gov/iwin/graphicsversion/main.html
Modernization	www.nws.noaa.gov/modernize
National Operational Hydrologic Research Ctr.	www.nohrsc.nws.gov
Radar Sites - University of Oklahoma	wwwcaps.ou.edu/~kbrews/88D.html
Southern Region	www.srh.noaa.gov/wfo/html/srwfo.html
Storm Prediction Center	www.nssl.noaa.gov/~spc
Tropical Atlantic Weather	www.nhc.noaa.gov
Western Region	www.wrh.noaa.gov
NOAA	www.noaa.gov
NOAA Weather Radio	www.nws.noaa.gov/nwr/index.html

Publications of the National Weather Service www.nws.noaa.gov/om/nwspub.htm

Others

Auroras	www.geo.mtu.edu/weather/aurora/
Bermuda Biological Station for Research	www.bbsr.edu/~norm/whatsup.gif
Downbursts and Microbursts	
Downbursts	www-frd.fsl.noaa.gov/mab/microburst/
Microburst Handbook	www.nssl.noaa.gov/~doswell/microbursts/Handbook.html
Great Lakes Temperatures	www.glerl.noaa.gov/cw/cwdata/lct/glsea.gif
Jarrel, Texas Tornado Photos	www.pulse.net/storm/Jarrell.htm
Satellite Data	
Colorado State University	www.cira.colostate.edu/ramm/rmsdsol/main.html
Naval Meteorology & Oceanography Command	www.fnoc.navy.mil
Sea Surface Temperatures	www.rsmas.miami.edu/images.html
Snow and Avalanches	www.csac.org
Today's Space Weather	www.sel.noaa.gov/today.html
Tommy's Weathercam List	www.rt66.com/~ozone/cam.htm
Topographic Maps	
Fermi Laboratories	fermi.jhuapl.edu/states/states.html
U.S. Geological Survey - Western US	www.flag.wr.usgs.gov/USGSFlag/Data/shadedRel.html
The Tornado Project	www.tornadopproject.com

7.2. DATA SETS ON ELECTRONIC MEDIA

Large amounts of weather and climate data can be stored on DC-ROM disks. For example, one CD-ROM produced by the National Climatic Data Center (NCDC) holds climate data for over 6000 stations, which is equivalent to 250,000 pages of printed text. Graphics packages and the driving software are included with some disks. Data exports are available so that the user can export the data from the disk to produce individual usable files on diskettes. Articles describing meteorological data storage are the following:

Mass, C.F., H.J. Edmon, H.J. Friedman, N.R. Cheney, and E.E. Recker, 1987: The use of compact discs for the storage of large meteorological and oceanographic datasets. *Bulletin of the American Meteorological Society*, **68**, 1556-1558.

Mass, C.F., 1993: The application of compact discs (CD-ROM) to the atmospheric sciences and related fields: An update. *Bulletin of the American Meteorological Society*, **68**, 1556-1558.

Ross, T.F., 1994: NCDC's CD-ROM products and on-line services. *Preprints of the Third Symposium on Education, Nashville, TN, American Meteorological Society, Boston*, J1-J4.

Towheed, S.S., 1993: NASA space and earth science data on CD-ROM. NSSDC WDC-A-R&S 93-01, National Space Science Data Center, Greenbelt, MD, 29 pp.

Government CD-ROMs

- *Climate Data from National Climatic Data Center (NCDC)*
NCDC Climate Services Branch, Federal Building, 151 Patton Avenue, Asheville NC 28801-5001.
Phone: (704) 271-4800
Email: orders@ncdc.noaa.gov
Web: www.ncdc.noaa.gov

- *International Station Meteorological Climate Summary*
Contains climatic data for 640 and 5800 secondary stations worldwide. Version 2.0 issued in June 1992.

- *Marine Climatic Atlas of the World*
Contains global historical marine data. Included are air and sea temperature, wind speed, sea-level pressure, wave height, gale winds, superstructure icing, and wind/current roses.

- *National Climate Information Disk*
Version 1.0 contains monthly temperature, precipitation, and Palmer drought index data for the 344 climatological divisions of the U.S. covering 1895-1989.

- *Geophysical Data*
Data base containing worldwide marine geophysical data are available from:
National Geophysical Data Center, 3253 Broadway, Boulder, CO 80303.
Phone: (303) 497-6338

- *Joint Education Initiative*
A set of three CD-ROMs for DOS or Macintosh for \$35 contains lessons, developed by teachers on a range of subjects, including the "Geophysics of North America."
Bill Johnson, 3433 A.V. Williams Building, University of Maryland, College Park, MD 20742.
Phone: (301) 405-2324

- *Snowcover Data*
CD-ROMs containing airborne and satellite snow data for portions of the U.S. and southern Canada for 1990 and 1991 are at:
National Operational Hydrologic Remote Sensing Center, Office of Hydrology, National Weather Service, 6301 34th Avenue South, Room 112, Minneapolis, MN 55450-2985.
Phone: (612) 725-3258

Commercial CD-ROMs

- CLEARVUE/eav**

- The El Niño*, \$35.00
- Everything Weather*, \$70.00
- Learning About Weather & Climate*, \$75.00
- Sky Works*, \$40.00.
- Team Xtreme: Operation Weather Disasters*, \$55.00
- Understanding Weather & Climate*, \$60.00
- Weather: Air In Action*, \$50.00.
- Weather Science Explorer*, \$60.00.
- The World's Weather*, \$90.00.

- Everything Weather**

1997. Climate maps, tracking tools, dramatic videos.
ISBN 6-30442210-5. \$39.99.

The Weather Channel, 300 Interstate North Parkway,
Atlanta, GA 30339.

Web: www.weather.com

- World climate**

Global climatic change data.

Chadwyck-Healey, Inc., 1101 King Street, Alexandria, VA
22314.

Phone: (800) 752-0515
(703) 683-4890

- World climate**

Climatic data for 2000 stations worldwide for \$295.

WeatherDisc Associates, Inc., 4584 N.E. 89th, Seattle,
WA 98115.

Phone: (206) 524-4314

or

Dr. Cliff Mass, Dept. of Atmospheric Science (AK40),
University of Washington, Seattle, WA 98195.

Phone: (206) 685-0910

7.3. INSTRUCTIONAL SOFTWARE

Selected updated address lists of software suppliers is in the annual *Science Education Suppliers Supplement* to *The Science Teacher* and other publications of the NSTA.

National Science Teachers Association, 1742 Connecticut
Ave., N.W., Washington, DC 20209-1171.

- Any Weather**

1998. RCA Records, ISBN 6-305172331. \$16.98.

- Climate and Weather/Our Town Data Base**

Grades 4-12.

Sunburst Communications, 101 Castleton Street,
Pleasantville, NY 10570.

- Discovery Works Weather and Climate**

1997. SIM Publishing, ISBN 6-30429502-2. \$24.99.

- Earth Science**

Videodisk, \$395.00, Grades 4 to 12.

Optical Data, 30 Technology Drive, Warren, NJ 07060.

- Everything Weather**

1997. Climate maps, tracking tools, dramatic videos.
ISBN 6-30442210-5. \$39.99.

The Weather Channel, 300 Interstate North Parkway,
Atlanta, GA 30339.

Web: www.weather.com

- Five Star Forecast**

Disk, manual, and workbook, \$59. Part of MECC's
Science Inquiry Collection including 'Weather maker' and
'Forecaster.'

MECC-Minnesota Education Computing Corporation, 3490
Lexington, Avenue North, St. Paul, MN 55126.

- Forecasting the Weather**

Double-sided disk, backup, worksheets, and manual,
\$59.95, Grades 6 to 9.

MCE Division of Lawrence Productions, MCE, Inc., P.O.
Box 458, Galesburg, MI 49053.

- Inclement Weather**

1998. World Domination Records, ISBN 6-305044708.
\$15.98.

- More Weather**

1998, ISBN 6-304794851. \$17.98.

- Weather**

1997. Two disks, backup, manual, \$49.95, Grades 3 - 8.

-Forecasting the weather.

-Temperature, humidity, air pressure, and wind.

-The weather station.

Orange Cherry, Box 390, Pound Ridge, NJ 10576-0390.

- The Weather**

1997. Book and CD-ROM. Smithmark Publishing, ISBN
0-76519109-1. \$14.98.

- Weather**

1998. World Book Multimedia, ISBN 0-716672367.
\$14.95.

- Weather Academy**

Two disks, backup, student workbook and manual, and
additional materials, \$99, Grades 5 to 8.

Focus Media, 839 Stewart Ave., Garden City, NY 11530.

- Weather In Action**

Two disks, backup, and manual, \$395.00, Grades 4 to 9.

National Geographic Society, Educational Services, 17th
and M Streets, N.W., Washington, DC 20036.

Phone: (800) 368-2728

- The Weather Tracker's Kit: Explore the Changing Forces of Nature**

1995. Book and CD-ROM. Running Press, ISBN 1-
56138641-3. \$29.95.

8. DATA SOURCES

Weather observations at numerous stations can be accessed nearly realtime with a computer and modem. Other weather data sources include radio and television broadcasts. Some climatological data can be obtained in electronic format, such as computer files or databases on diskette, tape, or CD-ROM; much of this is not free.

Essentially all meteorological data collected in the United States are archived by the National Climatic Data Center (NCDC), an agency of NOAA in Asheville, NC. Climatic data can be obtained from governmental sources, either through publications in libraries or certain government offices.

8.1. CURRENT WEATHER INFORMATION

Current weather observations from weather observation stations operated by the National Weather Service can be obtained from several sources that do not require computers. The following list includes media involved with dissemination of current weather information, forecasts, and special weather advisories, watches, and warnings.

•Hurricane Hotline

Recorded telephone messages are activated when a tropical storm or hurricane threatens. These messages identify areas affected by the watch or warning, location of the storm, forecasted movement, wind speeds, and tidal effects. There is a cost of 50 cents for the first minute, and 45 cents for each additional minute. The average call costs 85 cents.

Atlantic: (900) 410-NOAA or (900) 410-6622.

Pacific: (900) 410-CANE or (900) 410-2263.

•Marine Weather Radio

Weather observations, charts, warnings, advisories, and other information are broadcast on various marine weather radio frequencies for shipping interests. Stations operated by NOAA are part of an international network of marine weather radio stations. For marine interests, phone service is operated by BOAT/U.S. Weather Watch at (900) 933-BOAT--this is a toll call. A list of stations and frequencies operated on the Atlantic, Pacific, Gulf of Mexico, and Great Lakes is provided in a publication available from the Superintendent of Documents, Washington, DC 20418.

•NOAA Weather Radio

The expanded NOAA Weather Radio network of over 425 FM stations is operated by the National Weather Service (NWS) and provides continuous weather information. Stations operate at seven high FM-band frequencies:

162.400 Mhz	162.425 Mhz
162.450 Mhz	162.475 Mhz
162.500 Mhz	162.525 Mhz
162.550 Mhz	

NOAA Weather Radio broadcasts are also available from touch-tone telephones; select a local broadcast at:

(900) 884-NOAA

(900) 884-6622

Call (800) 662-6622 toll free for further information.

A listing of NOAA Weather Radio stations in the U.S. can be obtained from:

-Local National Weather Service offices.

-Customer Service, National Weather Service, NOAA, 1325 East-West Highway, Room 14360, Silver Spring, MD 20910. Phone (301) 713-0090.

-Web: www.nws.noaa.gov/nwr/nwr.htm

•The Weather Channel

This cable television channel continuously broadcasts weather programming from Atlanta, Ga. An educational segment entitled 'The Weather Classroom' is broadcast daily, and covers a wide variety of topics. Teachers may videotape this segment at no charge for use in their classrooms.

8.2. CLIMATOLOGICAL INFORMATION

•Canada

Canadian climate data can be obtained from two sources:

Canadian Government Publishing Center
Ottawa, Ontario
Canada K1A 0S9

Phillips, D.W., D.W. Gullett, and M.S. Webb, 1988: *Handbook on climate data sources of the Atmospheric Environment Service, 3rd edition*. Canadian Climate Center, Downsview, Ontario, Environment Canada, 326 pp.

•**Federal Sources of Climate Data**

Publications related to weather and climate, including publications in this section, can be found at many of the 1370 sites across the country. For more information about this program and the location of the nearest Depository, contact your local library or:

Federal Depository Library Program
U.S. Government Printing Office
Superintendent of Documents, Stop SM
Washington, DC 20402

•**National Climatic Data Center (NCDC)**

The following publications are available:

- Daily Weather Maps* (weekly)
- Storm Data* (monthly)
- Mariners Weather Log* (quarterly)
- Weekly Weather and Crop Bulletin*
- Weekly Climate Bulletin*
- Local Climatic Data* for individual stations (monthly and annual)
- Climatological Data* for individual states (monthly and annual)
- Hourly Precipitation Data* for individual states (monthly)
- Climates of the United States*
- Monthly Climatological Data for the World* (monthly)
- Monthly and Seasonal Weather Outlook* (semimonthly)

Federal Building
151 Patton Avenue
Asheville NC 28801-5001
Phone: (704) 271-4800
Fax: (704) 271-4876
Web: www.ncdc.noaa.gov

•**NOAA Library and Information Services Division**

Central Library
Washington Science Center-4
6009 Executive Blvd.
Rockville, MD 20852
Circulation: (301) 443-8330
Reference: (301) 443-8332
Interlibrary loan: (301) 443-8333

•**Regional Climate Centers**

Six centers have climatic databases for the states in their region. These centers will respond to requests for regional climate information.

High Plains Climate Center

Colorado, Kansas, Nebraska, North Dakota, South Dakota, Wyoming.
Lincoln, NE 68583-0728
Phone: (402) 472-5206
(402) 472-6706

Midwest Climate Center

Indiana, Illinois, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio, Wisconsin.
Champaign, IL
Phone: (217) 244-1488
(217) 344-8226

Northeast Regional Climate Center

Connecticut, Delaware, Maine, Maryland, Massachusetts, New Jersey, New Hampshire, New York, Pennsylvania, Rhode Island, Vermont, West Virginia.
Ithaca, NY 14853
Phone: (607) 255-1749
(607) 255-1751

Southeast Regional Climate Center

Alabama, Florida, Georgia, North Carolina, South Carolina, Virginia.
1201 Main Street, Suite 100
Columbia, SC 29201
Phone: (803) 737-0800

Southern Regional Climate Center

Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, Texas.
Baton Rouge, LA 70803-4105
Phone: (508) 388-6137
(508) 388-5021

Western Regional Climate Center

Arizona, California, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington.
Reno, NV 89506-0220
Phone: (702) 677-3139
(702) 677-3106

9. PROFESSIONAL ORGANIZATIONS

Weather

American Meteorological Society (AMS)
45 Beacon Street
Boston, MA 02108-3693
Phone: (617) 227-2425
Web: www.ametsoc.org

Canadian Meteorological and Oceanographic Society (CMOS)
151 Slate Street
Ottawa, Ontario, Canada

International Weather Watchers
P.O. Box 77442
Washington, DC 20009

National Weather Association (NWA)
6704 Wolke Court
Montgomery, AL 36116-2134
Phone: (334) 213-0388
Web: www.nwas.org

World Meteorological Organization (WMO)
41, Avenue Giuseppe-Motta
Case postale no. 2300
CH-1211 Geneva 2
Switzerland
Web: www.wmo.ch

General Science

American Association for the Advancement of Science (AAAS)
1333 H Street, N.W.
Washington, DC 20005-4792
Phone: (202) 326-6670
Web: www.aaas.org

American Geophysical Union (AGU)

2000 Florida Avenue, N.W.
Washington, DC 20009
Phone: (202) 939-3223
Web: www.agu.org

American Water Resources Association (AWRA)
5410 Grosvenor Lane, Suite 220
Bethesda, MD 20814-2192
(301) 493-8600

Education

American Association of Physics Teachers (AAPT)
5112 Berwyn Road
College Park, MD 20740-4100

National Association of Geology Teachers (NAGT)
Geology Department
Western Washington University
576 High Street
Bellingham, WA 98225-9080

National Earth Science Teachers Association (NESTA)
Science Department #14
Lansing Community College
430 Capitol Avenue
Lansing, MI 48901

National Science Teachers Association (NSTA)
1742 Connecticut Avenue, N.W.
Washington, DC 20009-1171
Phone: (202) 328-5800

Many states have their own science teacher organizations that hold conventions and publish periodicals. Contact the state education department for further information.

10. ADDITIONAL RESOURCE CONTACTS

American Meteorological Society AERAs

The American Meteorological Society (AMS) established a national network of teachers identified as Atmospheric Education Resource Agents (AERA). A partnership of scientists, educators, government, and industry focuses on attracting young students into continued study of science, mathematics, and technology. At least one master teacher in each state has been selected to act as a resource agent. A current listing can be obtained from:

Ira Geer
American Meteorological Society
Project Atmosphere
1200 New York Avenue, Suite 410
Washington, DC 20005
Phone: (202) 466-6070

National Weather Service WCMs

The National Weather Service (NWS) has established a national network of Warning and Coordination Meteorologists (WCM) at each forecast office. A current listing that identifies the WCM for your city can be obtained from:

Customer Service
National Weather Service, NOAA
1325 East-West Highway, Room 14360
Silver Spring, MD 20910
Phone: (301) 713-0090
Fax: (301) 713-1598
Email: Linda.Kremkau@noaa.gov
Web: www.nws.noaa.gov/om/public/htm

A list of NWS stations' web site is at www.ugems.psu.edu/~owens/WWW_Virtual_Library/nwsfo.html. They are also provided by a map at www.wr.noaa.gov/wrhq/nwspage.html. The following lists web sites and WCMs at NWS offices.

Alabama

Birmingham

Web: www.acesag.auburn.edu/department/nws/
WCM: Brian Peters

Mobile

Web: www.srh.noaa.gov/wfo/html/mobtemp.html
WCM: Gary Beeler

Alaska

Anchorage

Web: www.alaska.net/~nwsfoanc/
WCM: David Goldstein

Fairbanks

Web: www.faiwsfo.org/
WCM: John Lingaas

Juneau

Web: www.alaska.net/~jnufo/
WCM: Robert Kanan

Kodiak

Web: www.ptialaska.net/~wsoadq/index.html

Palmer

WCM: Bruce Turner

Arizona

Flagstaff

Web: nimbo.wr.noaa.gov/Flagstaff/
WCM: Chris Cuoco

Phoenix

Web: www.phx.noaa.gov/
WCM: Vacant

Tucson

Web: nimbo.wr.noaa.gov/Tucson/twc.html
WCM: Paul Flatt

Arkansas

Little Rock

Web: www.srh.noaa.gov/lzk/
WCM: John Robinson

California

Eureka

Web: www.wr.noaa.gov/Eureka/
WCM: John Lovegrove

Los Angeles

Web: www.nwsla.noaa.gov/
WCM: Tim McClung

Sacramento

Web: www.wr.noaa.gov/Sacramento/
WCM: Roger Pappas

San Diego

Web: www.wr.noaa.gov/Sandiego/nws.html
WCM: Ed Clark

San Francisco

Web: www.nws.mbay.net/home.html
WCM: Charles Morrill

San Joaquin Valley

Web: www.wr.noaa.gov/Hanford/main.htm
WCM: Dan Gudge

Colorado

Denver/Boulder

Web: www.crh.noaa.gov/den/
WCM: Robert Glancy

Grand Junction

Web: www.crh.noaa.gov/gjt/
WCM: James Pringle

Pueblo

Web: www.crh.noaa.gov/pub/home.htm
WCM: Tom Magnuson

District of Columbia

Web: www.nws.noaa.gov/er/lwx/
WCM: Barbara Watson

Florida

Jacksonville

Web: www.nwsjax.noaa.gov/
WCM: Fred Johnson

Key West

Web: www.srh.noaa.gov/eyw/
WCM: Vacant

Melbourne

Web: sunmlb.nws.fit.edu/
WCM: Dennis Decker

Miami
 Web: www-mfl.nhc.noaa.gov/
 WCM: Jim Lushine
Tallahassee
 Web: www.nws.fsu.edu/
 WCM: Bob Goree
Tampa Bay Area
 Web: www.marine.usf.edu/nws/
 WCM: Walt Zaleski

Georgia
Atlanta
 Web: www.srh.noaa.gov/ftproot/ffc/
 WCM: Barry Gooden

Guam
 Web: tgs5.nws.noaa.gov/pr/guam/
 WCM: Tom Tarlton

Hawaii
Honolulu
 Web: tgs5.nws.noaa.gov/pr/hnl/
 WCM: Thomas Heffner

Idaho
Boise
 Web: www.boi.noaa.gov/
 WCM: Carl Weinbrecht
Pocatello
 Web: www.wrh.noaa.gov/Pocatello/Pocatello.htm
 WCM: Bruce Bauck

Illinois
Chicago
 Web: wtaiga.geog.niu.edu/nwslot
 WCM: Jim Allsopp
Lincoln
 Web: www.crh.noaa.gov/ilx/ilxhome.htm
 WCM: Rod Palmer

Indiana
Indianapolis
 Web: www.crh.noaa.gov/ind/front.htm
 WCM: David Tucek
Northern Indiana
 Web: www.crh.noaa.gov/iwx/
 WCM: Jane Hollingsworth

Iowa
Davenport
 Web: www.crh.noaa.gov/dvn/
 WCM: James Meyer
Des Moines
 Web: www.crh.noaa.gov/dmx/
 WCM: Jeffrey Johnson

Kansas
Dodge City
 Web: www.dodgecity.net/nws/
 WCM: Jeff Hutton
Goodland
 Web: www.crh.noaa.gov/gld/index.htm
 WCM: Kevin Tynott
Topeka
 Web: www.crh.noaa.gov/top/
 WCM: Mike Akulow

Wichita
 Web: www.crh.noaa.gov/ict/
 WCM: John Ogren

Kentucky
Jackson
 Web: www.crh.noaa.gov/jkl/
 WCM: Shawn Harley
Louisville
 Web: www.crh.noaa.gov/lmk/welcome.htm
 WCM: Norman Reitmeyer
Paducah
 Web: www.crh.noaa.gov/pah/index.html
 WCM: Ricky Shanklin

Louisiana
Lake Charles
 Web: www.srh.noaa.gov/FTPROOT/LCH/default.htm
 WCM: Roger Erickson
New Orleans/Baton Rouge
 Web: www.srh.noaa.gov/lix/
 WCM: Frank Revitte
Shreveport
 Web: www.srh.noaa.gov/ftproot/shv/html/homepg.htm
 WCM: Bruce Burkman

Maine
Portland
 WCM: John Jensenius

Massachusetts
Boston
 Web: www.nws.noaa.gov/er/box/
 WCM: Glenn Field

Michigan
Detroit
 Web: www.crh.noaa.gov/dtx/start.htm
 WCM: Darin Figurskey
Grand Rapids
 Web: www.crh.noaa.gov/grr/index.html
 WCM: Mike Heathfield
Marquette
 Web: www.crh.noaa.gov/mqt/
 WCM: Jack Pellett
North Central Lower Michigan
 Web: www.crh.noaa.gov/apx/index.htm
 WCM: Brian Hirsch

Minnesota
Duluth
 Web: www.crh.noaa.gov/dlh/duluth.htm
 WCM: Carol Christenson
Minneapolis
 Web: www.crh.noaa.gov/mpx/mpx.html
 WCM: Todd Krause

Mississippi
Jackson
 Web: www.jannws.state.ms.us/
 WCM: James Butch

Missouri
Kansas City
 Web: www.crh.noaa.gov/eax/eax.htm
 WCM: Bill Bunting
Saint Louis

Web:	www.crh.noaa.gov/lxs/lxs.htm	WCM:	George Lemons
WCM:	Jim Kramper	<u>Wilmington</u>	
<u>Springfield</u>		Web:	www.wilmington.net/nwsilm/index.html
Web:	www.crh.noaa.gov/sgf/sgf1.htm	WCM:	Tom Matheson
WCM:	Steve Runnels		
Montana		North Dakota	
<u>Billings</u>		<u>Bismarck</u>	
Web:	www.wrh.noaa.gov/Billings/	Web:	www.crh.noaa.gov/bis/
WCM:	Bert Nelson	WCM:	Daniel Noah
<u>Glasgow</u>		<u>Grand Forks</u>	
Web:	www.wrh.noaa.gov/Glasgow/	Web:	www.crh.noaa.gov/fgf/
WCM:	Kimberley Bailey	WCM:	Jim Belles
<u>Great Falls</u>		Ohio	
Web:	www.wrh.noaa.gov/Greatfalls/	<u>Cincinnati</u>	
WCM:	Lynn Valtinson	Web:	www.nws.noaa.gov/er/iln/iln.htm
<u>Missoula</u>		WCM:	Mary Jo Parker
Web:	www.wrh.noaa.gov/Missoula/	<u>Cleveland</u>	
WCM:	Peter Felsch	Web:	www.csuohio.edu/nws/
		WCM:	Larry Gabric
Nebraska		Oklahoma	
<u>Hastings</u>		<u>Oklahoma City</u>	
Web:	www.crh.noaa.gov/gid/home.htm	Web:	www.nssl.noaa.gov/nws/
WCM:	Steve Kisner	WCM:	Jim Purpura
<u>North Platte</u>		<u>Tulsa</u>	
Web:	www.crh.noaa.gov/lbf/	Web:	www.nwstulsa.noaa.gov/
WCM:	Gene Bowman	WCM:	Steve Piltz
<u>Omaha</u>		Oregon	
Web:	www.crh.noaa.gov/oax/front.html	<u>Medford</u>	
WCM:	Brian Smith	Web:	nimbo.wrh.noaa.gov/Medford/index.html
		WCM:	John Casad
Nevada		<u>Pendleton</u>	
<u>Elko</u>		Web:	www.wrh.noaa.gov/Pendleton/
Web:	www.wrh.noaa.gov/Elko/	WCM:	Rob Doherty
WCM:	Ed Clark	<u>Portland</u>	
<u>Las Vegas</u>		Web:	www.wrh.noaa.gov/Portland/
Web:	www.wrh.noaa.gov/Lasvegas/	WCM:	Dan Keeton
WCM:	Ron McQueen		
<u>Reno</u>		Pago Pago	
Web:	www.wrh.noaa.gov/Reno/	WCM:	Akapo Akapo
WCM:	Roger Lamoni		
New Mexico		Pennsylvania	
<u>Albuquerque</u>		<u>Philadelphia</u>	
Web:	www.srh.noaa.gov/abq/	Web:	tgs5.nws.noaa.gov/er/phi/
WCM:	Keith Hayes	WCM:	Joe Miketta
		<u>Pittsburgh</u>	
New York		Web:	www.nws.noaa.gov/er/pit/
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Web:	nwsfo.nws.cestm.albany.edu/	<u>State College</u>	
WCM:	Dick Westergard	Web:	bookend.met.psu.edu/index.html
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<u>Buffalo</u>		Web:	www.upr.clu.edu/nws/
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Web:	www.nws.bnl.gov/	<u>Charleston</u>	
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Rapid City

Web: www.crh.noaa.gov/unr/index.htm
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Sioux Falls

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Tennessee

Knoxville/Tri-Cities

Web: www.srh.noaa.gov/MRX/MRX.HTML
WCM: Howard Waldron

Memphis

Web: www.srh.noaa.gov/meg/
WCM: John White

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Web: www.srh.noaa.gov/FTPROOT/OHX/HTML/OHX.HTML
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Texas

Amarillo

Web: www.srh.noaa.gov/ama/default.html
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Web: www.srh.noaa.gov/ewx/
WCM: Larry Eblen

Brownsville

Web: www.srh.noaa.gov/bro/
WCM: Don Ocker

Corpus Christi

Web: www.srh.noaa.gov/crp/
WCM: Terry Huber

Dallas/Fort Worth

Web: www.srh.noaa.gov/fwd/
WCM: Jim Stefkovich

El Paso

Web: nwselp.epcc.edu/
WCM: *Vacant*

Houston/Galveston

Web: www.srh.noaa.gov/hgx/
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Lubbock

Web: cra.nws.noaa.gov/nwslbb/index.html
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Midland/Odessa

Web: www.srh.noaa.gov/MAF/default.html
WCM: George Mathews

San Angelo

Web: www.srh.noaa.gov/SJT/
WCM: Buddy McIntyre

Utah

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Burlington

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Wakefield

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Milwaukee

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Wyoming

Cheyenne

Web: www.crh.noaa.gov/cys/
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Frederick, MD 21701

Air Pollution Control Association
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Pittsburgh, PA 15213

American Geological Institute (AGI)
National Center for Earth Science Education
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Bureau of Science Education
New York State Education Department
Albany, NY 12234

Climate Protection Institute
5833 Balmoral Drive
Oakland, CA 94619
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Council on Environmental Quality (CEQ)
722 Jackson Place
Washington, DC 20006

The Everyday Weather Project
National School Weather Project
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Federal Aviation Administration (FAA)
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Washington, DC 20591

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Washington, DC 20546

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U.S. Department of Energy (DOE)
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Washington, DC 20585

U.S. Environmental Protection Agency (EPA)
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Washington, DC 20009
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U.S. Geological Survey (USGS)
U.S. Department of the Interior
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The Weather Channel
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300 Interstate North Parkway
Atlanta, GA 30339
Web: www.weather.com

Weather Modification Association
P.O. Box 8116
Fresno, CA 93727-8116
Phone: (209) 436-3486

Powers of Nature Exhibit

Powers of Nature travels to large museums during its tour over the next several years. It has realtime data, and many portions that are interactive. While the exhibit includes earthquakes and volcanoes, the largest portion is on weather. The following is the schedule of openings:

- February 1998
Franklin Institute Philadelphia
- October 1998
California Museum of Science Los Angeles
- April 1999
Center of Science and Industry Columbus
- October 1999
Museum of Science and History Fort Worth
- April 2000
Museum of Science St. Paul
- October 2000
Museum of Science Boston
- April 2001
Museum of Science and Industry Chicago

11. ABBREVIATIONS

AAAS	American Association for the Advancement of Science
AAPT	American Association of Physics Teachers
AERA	Atmospheric Education Resource Agent for the AMS
AGU	American Geophysical Union
AMS	American Meteorological Society
CMOS	Canadian Meteorological and Oceanographic Society
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
ISBN	International Standard Book Number
ISSN	International Standard Serial Number
NAGT	National Association of Geology Teachers
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research
NCDC	National Climatic Data Center
NOAA	National Oceanic and Atmospheric Administration
NESTA	National Earth Science Teachers Association
NSTA	National Science Teachers Association
NWA	National Weather Association
NWS	National Weather Service
UCAR	University Corporation for Atmospheric Research
WMO	World Meteorological Organization